Volume 89 Number 2

STEEL

For forty-eight years—IRON TRADE REVIEW

PRODUCTION ◆ PROCESSING ◆ DISTRIBUTION ◆ USE

This Week in Steel

SINCE March, when the spring bulge in production flattened out, steel has scarcely embarked upon a new month before writing it off and conferring its hopes upon the succeeding one. With disappointing regularity these deferred hopes have not materialized, yet, not daunted, the industry is now engaged in jettisoning July and investing August with its expectations. There is a tradition that August initiates a fall rise, as seven of the last ten years attest. From the rapidity with which steelmaking operations have rebounded (Page 57) from the July 4 shutdown some comfort is derived. And, while the last ounce of cheer was extracted initially from the President's proposal of a war debt moratorium, its general acceptance is heartening.

Decline So Sharp It Encourages

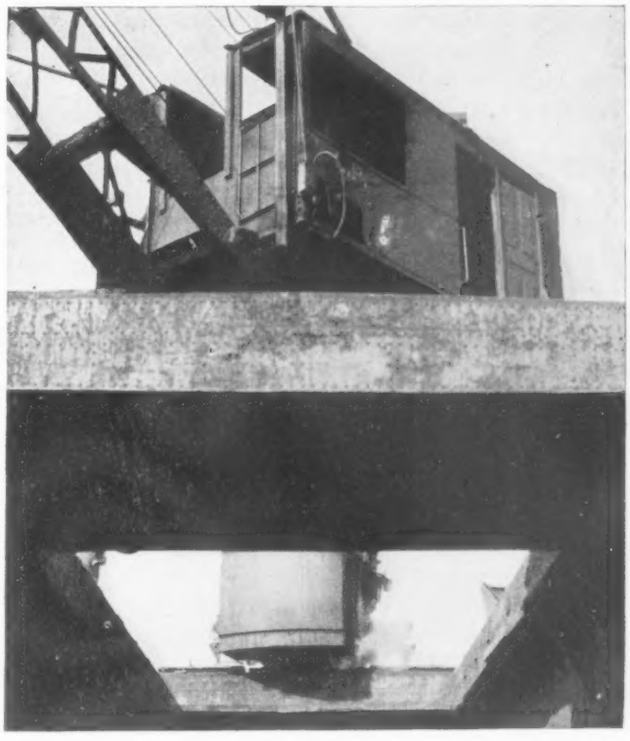
Almost paradoxically, some hopes for an improved August rise from the ashes of June production of iron and steel. So low did the daily rates descend—to 79,843 gross tons for steel ingots (Page 19) and 54,599 tons for pig iron (Page 20)—that it is generally believed little further ground can be given. To July is assigned the task of levelling off the decline. For the first half year output of steel has totaled only 15,258,519 gross tons, indicating the burden accruing to the last half if 1931 is to be much better than a 30,000,000-ton year, compared with 39,286,287 tons in 1930. And with a net loss of 14 active stacks, the pig iron industry has only 91 out of 303 in operation, a condition so striking as to engender optimism that the worst is at hand.

Sentiment on Continent Improves

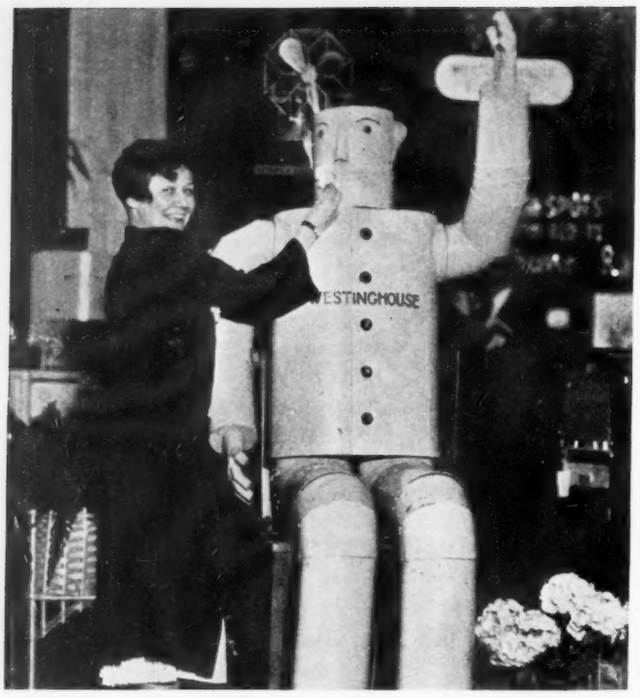
It has been noted in recent weeks that sentiment in the American steel markets has not plumbed the extreme depths to which production has fallen. On the Continent, sentiment likewise is pitched on a higher plane (Page 84)—Belgium noting some strengthening of prices and Germany a moderate quickening, partially ascribed to the receipt of a 300,000-ton order for rolled products for Russia. Britain, however, continues dull save in tin plate. . . . Speaking of Russia, the treasury department has made it clear (Page 17) that it will issue no blanket embargo on imports from the soviet union.

Rate Rise Coming Via Slow Freight

Several weeks ago the security and industrial markets were pleasingly sensitive to two important developments—the President's suggested moratorium on war debts and the railroad's petition for increased freight rates. The former has sustained the expectation; the latter appears



Like eagles in their eyries, eager to swoop down upon unsuspecting prey, are these electric cranes mounted on the lake steamer Henry Cort to facilitate handling cargoes of steel, pig iron and scrap



Mr. Vccalite, of the Westinghouse Electric & Mfg. Co. force, is enjoying a smoke. His principal work includes obeying spoken commands, sitting, standing, operating electrical devices, speaking

to be drying up. Whatever relief the railroads were to derive from a rate advance must be prompt, it was specified. The interstate commerce commission, seemingly unmoved, has decided (Page 15) to take supporting evidence beginning July 15 and to hear the opposition beginning Aug. 31. While this is fairly prompt action, considering the import of the matter, nevertheless, it implies that a decision before fall is improbable.

Two-way Traffic on Welland Canal

Iron ore, thought shorn of market interest by long-term contracts, emerged into the news several weeks ago when cargoes from Algeria, 4000 miles distant, were unloaded on Lake Erie only 900 miles from the Mesabi. Now, with 550-foot freighters admitted to the Welland canal, Lake Superior ore is being carried (Page 17) through to Hamilton, Ont. Thus, while the ore movement is the lowest in a decade, history is being made. . . . A new study by the American Iron and Steel institute reveals (Page 18) that in 5 years the average output of blast furnaces has increased 20 per cent.

Industry Alleviates Its Irritations

Not wholly engrossed in production, industry is engaged in setting its house in order. . . . Bethlehem Steel, in litigation over its bonus plan, is meeting objections by placing its officers on a definite, normal salary basis and modifying (Page 16) the base upon which the bonus is predicated. . . . Important bituminous coal operators, whose plight attracted attention recently when caught between a crossfire of rival unions, are meeting in Washington this week (Page 15) to discuss their situation; there may be a meeting of operators with the United Mine Workers union shortly. . . . To assist buyers of coal to specify the most economical grade for their requirements, a "use classification" of coals is being prepared (Page 18).

New Models Atlas of Auto World

To an unexpected extent output of new models, principally by Plymouth, Packard and Nash, and a sustained schedule by Chevrolet are neutralizing recessions by other manufacturers, including Ford, and are maintaining automobile production at close to the June level. Detroit continues to hear (Page 25) of a forthcoming diesel-powered model by Ford, but is skeptical. In line with concentration of driver aids on dashboards, the introduction of a motor oil viscosity gage is near. . . . While the automobile industry is generally credited with being a large user of modern tool steels, the extent of their use (Page 33) in other fields, including wire mills, cold finishing work, tube and pipe mills, forge shops and foundries—to cite only a few—is convincing.

Resin Smudge an Old Time Aid

Old methods still stand the test of time, as, for instance, the coating of ingot molds in the manufacture of high-grade steel. A tray of resin is lowered into the mold, the resin lighted and a cover placed over the mold. The resulting smudge (Page 41) is found effective in preventing seizing. . . . By contrast, in the East a 6-room 2-story dwelling with full basement and 2-car garage has been welded. Standard size welded steel panels were assembled on a steel plate sill, covered with wire mesh and insulating material, with brick on the outside and plaster on the inside, forming (Page 42) a 4-inch wall. . . . An unusually large order for railroad castings is one for 26,000 tons of malleable for 1500 gondolas, these cars (Page 38) having high-strength malleable side stakes.

Cast Crankshafts a New Use

Crankshafts and connecting rods ordinarily are forged, but pioneering a new field, a midwestern steel foundry has been successful in casting them for two large pump manufacturers from a special analysis nickel-manganese steel. (Page 31). Casting has permitted redesign of the parts to strengthen weak points and to afford proper metal distribution. High physical properties are obtained by a special heat treatment consisting of three distinct operations.

Rail Rate Hearings Called; Southern Advance Refused

WASHINGTON—Hearings on the railroads' petition for a 15 per cent increase in freight rates will begin before the interstate commerce commission, July 15, when the proponents will present evidence in support of their case. The commission has designated Aug. 31 as the date for presentation of testimony in opposition to the increase, and for the cross-examination of witnesses who testify at the initial hearing.

It also is the purpose of the commission to hold hearings in other parts of the country. The cities and the dates, however, have not been named. The commission plans to move promptly in the case, but is not being rushed by the railroads' representation that immediate "emergency" action is necessary.

Many Protest, Few Applaud

More than 500 protests against the advance have been filed with the commission. These have included statements from state regulatory commissions, commercial and trade organizations, and from individuals. Letters in support of the increase have been negligible in number.

A division of the commission, comprising Commissioners Meyer, Lewis and Lee, has been designated to take over administrative charge of the hearings. Other commissioners plan to sit, insofar as other duties will permit. Examiners William A. Disque, G. H. Mattingly and Howard Hosmer have been designated to assist the commissioners.

Petitions for increases in intrastate rates also have been filed by the carriers. Meetings of representatives of state commissions were called to begin July 7, by Harvey H. Hannah, president, National Association of Railroad and Utility commissioners.

Increase in Southern Iron And Steel Rates Refused

Washington—Railroads have been refused permission to increase rates on iron and steel products from Birmingham and other southern points to eastern, New England, Buffalo and Pittsburgh territories. The carriers petitioned the interstate commerce commission to cancel commodity rates and apply class rates on a long list of products, excepting cast iron pipe, blooms and billets, wire rods in coils, cotton-bale ties and tie buckles, ingot molds, rails and track material, pig iron, ferrophosphorus, ferrosilicon, ferromanganese, and spiegeleisen. The southern rates are lower than in the rest of the country, railroads represented in seeking advances amounting to 20 per cent, and more on certain articles.

"It is undeniably true, as here contended," said the commission, "that the present rates from the South to the North are a result of market competition, but that fact in itself is no proof that such rates may be lawfully increased and more particularly by abrupt increases, such as here proposed, which would do serious violence to a legitimate business long fostered by respondents.

"The evidence upon this record leaves no doubt that the southern manufacturers would have serious if not insurmountable difficulty in competing with northern manufacturers in the destination territory if the proposed rates became effective.

"Since the demand in southern territory for the articles manufactured by them is much less than they can supply it must be that, if their market in the North were thus seriously restricted, the very existence of some of these southern manufacturers would be threatened."

Pittsburgh Chamber Favors Rate Advance

Pittsburgh—The Pittsburgh chamber of commerce has adopted a resolution favoring the higher freight charges proposed by railroads. Some opposition to this action was made by commission and produce shippers.

"Carriers have about reached the limit in reducing operating expenses outside of a reduction in wages of railway employes, a step which should be taken only as a last resort," said a committee in its report to the chamber.

"There is urgent necessity to protect revenues of these carriers, representing the major transportation agency upon which trade and industry is mainly dependent for service, and which have been reduced to a level endangering the legality of their securities as investments for savings banks, insurance companies and trust funds, thus threatening their ability to get additional credit for capital requirements needed to continue to provide the present efficient service."

Lamont Calls Conference To Settle Coal Strikes

Washington—Twenty-five leading coal operators in the western Pennsylvania, Kentucky, and West Virginia fields have been invited to a conference here July 9 by Secretary of Commerce Lamont to discuss the strikes and labor difficulties which have existed in those fields several weeks. John L. Lewis, president, United Mine Workers of America, sent a telegram to President Hoover asking him to investigate the situation, and the President referred the problem to Secretary Lamont and Secretary of Labor Doak.

It is reported here that some of the coal mine operators who fought and defeated the United Mine Workers in 1927 now would welcome a parley looking to an agreement with the union, since the National Miners' union, a radical organization, has been gaining strength and is held responsible for many of the recent disturbances in mining communities. Whether there has been any change in attitude toward the Mine Workers, however, remains to be seen. It is indicated that a conference will be called later with Mine Workers' representatives.

NATURE HEATS THE BATH WATER FOR BOISE CITY

Wells of water at 170 degrees Fahr. at Boise City, Idaho, supply many households for domestic and heating purposes, according to the United States Pipe & Foundry Co. Excess oxygen in the bubbling fluid causes rapid corrosion of pipes and deLavaud centrifugal cast iron pipe has been laid to resist this action, as shown in the illustration

Bethlehem Modifies Bonus; Opposing Interests Approve

MODIFICATION of the bonus plan of the Bethlehem Steel Corp. and dismissal of the injunction obtained by minority stockholders against the former bonus plan appear to have cleared the situation surrounding the payment of bonuses to executives of that company.

Dissenting stockholders approved the modified plan at an adjourned session of the annual meeting, held at Newark, N. J., July 2. Immediately following this agreement Vice Chancellor Backes, at Atlantic City, dismissed the injunction.

Charles M. Schwab, chairman of the board and originator of the present profit-sharing system, outlined to the adjourned meeting the six principal changes and recommended their adoption, the directors concurring.

Bonuses After Depreciation

The most important change from the old plan is that the bonus payments are to be based on the consolidated net income after deducting depreciation, depletion and obsolescence charges, instead of before, as has been the custom. It is estimated that this change will reduce the total available for bonus payments by $1,200,000, on the basis of $15,000,000 annual depreciation.

A summary of the changes in the plan is as follows:

1. The executive officers are to receive definite normal salaries, which, in the case of each, shall be fixed by those of the directors of the corporation who shall not receive any bonus payments, acting as a committee.

2. The executive bonuses shall be based upon the consolidated net income of the corporation and its subsidiaries after deducting all fixed charges and depreciation and the annual dividends upon the outstanding preferred stock of the corporation excluding any shares thereof that may be held in its treasury. The term "depreciation" shall be deemed to include depletion and obsolescence. The rates and basis of depreciation shall be such as the auditors of the corporation shall approve, and the total annual amount of the depreciation shall be reported to, and be subject to the approval of, the board of directors. The chairman shall inform those of the directors who shall not be entitled to receive any bonus payments of the allocation of the total percentage among the various participants.

3. The aggregate percentage of such consolidated net income, after deducting all fixed charges, depreciation and such preferred dividends, which may be distributed in executive bonuses for any period shall be fixed by those of the directors of the corporation who shall not receive any bonus payments, acting on a committee, such aggregate percentage not to exceed eight per cent for any year.

4. The minimum percentages which were a part of the system as originally adopted are abandoned and it is placed wholly in the discretion of the directors not receiving bonus payments to fix such aggregate percentage within the maximum above specified.

5. The total amount of executive bonus payments made for each year is to be reported to the stockholders in the annual report of the corporation for such year, as was done for the year 1930.

6. The executive bonus payments may be made annually or at such fixed intervals during the year as shall be determined from time to time by the board of directors or the chairman of the board to be in the best interests of the corporation.

In joining in the recommendation of the directors, Mr. Schwab said that he was not unmindful of the statement he made at the annual stockholders meeting April 14, that to make the change described with reference to the depreciation would be a backward step.

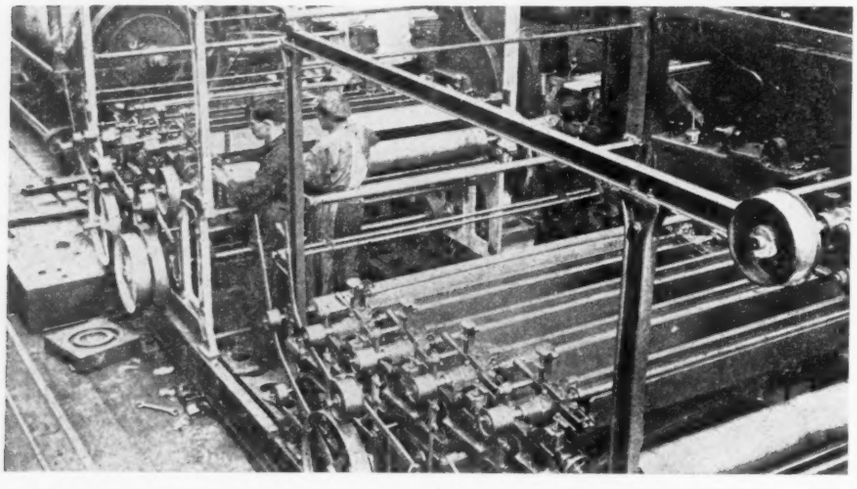
"Bethlehem, however, has grown to be a great and prosperous institution," he continued. "That fact, I believe, amply evidences the effectiveness of the bonus system in its present form. I believe also that the corporation has reached such a position in its development that the system modified as I have outlined will operate satisfactorily for the accomplishment of the purposes we all have in view. Accordingly, I am quite willing to recommend the changes."

The action is regarded as removing an important obstacle in the path of the proposed Bethlehem-Youngstown merger.

Suit Filed in January

In November last year a group of stockholders who received Bethlehem stock when Midvale Steel & Ordnance Co. was absorbed a few years ago began an agitation over the Bethlehem bonus question. In January, this year, Camillus Berendt and three other stockholders filed suit in the New Jersey chancery court demanding restitution of bonuses, which they claimed amounted to $36,000,000 since 1911, and seeking to enjoin Bethlehem from making further bonus payments. The so-called Midvale minority group, which by that time represented 20,000 stockholders, joined in this action.

Through this suit they were instrumental in having Vice Chancellor Backes of the chancery court issue a restraining order, now vacated, which came just prior to the opening of the annual meeting April 14 and not only changed the complexion of the proceedings, but transformed it technically into possibly the longest of such character in the annals of industry.



Proletarian workers are depicted assembling a shearing machine at the "Red Putilov" machine building works at Leningrad

Defer Meeting to Friday

Newark, N. J.—The adjourned special meeting of stockholders of the Bethlehem Steel Corp. has been adjourned to 10.30 a.m., July 10. It is believed this meeting will record in the minutes the result of the ballots which the court allowed to be tabulated but not recorded, on the question of the bonus payments.

Calls Small Manufacturers

New York—At Lake George, N. Y., Aug. 10 the National Industrial Conference board, of New York, will hold what is described as the first

convention of the smaller industries of the country. The convention is expected to prove an important step toward the solution of problems of management confronting the smaller manufacturing industries.

May Build Large Shop

Boston—Boston & Maine railroad has transferred 16 acres of land to the Palmer Steel Co. at Chicopee, Mass., and it is intimated that the largest steel fabricating plant in New England will be erected there.

Two Dredge Pumps Bought

Washington — Goslin-Birmingham Mfg. Co. Inc., Birmingham, Ala., has been awarded contract for a complete dredging pump for the U. S. engineer, Savanah, Ga., on a bid of $1025. The same company received the contract for a dredging pump for Galveston with a bid of $6282.

Lake and Foreign Iron Ores Cross Paths in New Welland Canal

HISTORY is being made in the shipping of iron ore on the Great Lakes, though less ore is being carried than in any other season in the past ten years. New developments significant to the steel industry are resulting from the opening of the enlarged Welland canal, which now permits the passage of 550-foot vessels from Lake Erie to Lake Ontario.

STEEL, June 11, page 16, told of the first cargoes of foreign iron ore to be shipped through the canal to Lake Erie, to the plant of the Canadian Furnace Co., Port Colborne, Ont., 20 miles west of Buffalo.

Now the first cargoes of Lake Superior iron ore are going through the canal in the opposite direction, to the Steel Co. of Canada, at Hamilton, Ont., on Lake Ontario.

Imported iron ore hauled more than 4000 miles from North Africa, and ore from the Lake Superior district carried nearly 900 miles have crossed each other's paths in the Welland canal, within one month.

The Steel Co. of Canada heretofore has received its shipments of lake ore by rail from Port Edward, Ont. This port is opposite Port Huron, Mich. The ore has been transferred from vessels to cars. The distance by rail from Port Edward to Hamilton is approximately 150 miles; by water about 400 miles. The shippers cut off the 150-mile rail haul, and take advantage of the vessel rate to the Welland canal, which is the same as to other Lake Erie points. What rate arrangements have been made for the additional haul through the canal and to Hamilton are not apparent. It is evident that new schedules will grow up, applying to deliveries to Lake Ontario, and to foreign ore handled to the Great Lakes.

The Steel Co. of Canada received about 350,000 tons of lake ore in 1930. It has an interest in one or two of the mines operated by Pickands, Mather & Co. The steamer COLLINGWOOD loaded 5324 tons at Escanaba, Mich., June 24, and in a few days delivered it at the steel company's docks, which have been improved recently. This was the first all-water delivery.

The second cargo was 8500 tons, from Escanaba, steamer WESTMOUNT, due at Hamilton July 3. The steamer EMPEROR, with 8000 tons, and the HAGGERTY, with similar cargo, loaded at Escanaba now are on their way. These four steamers are operated by the Canada Steamship Lines Inc. They are just under the allowable maximum length for the canal, and they have capacity for 10,000 tons, though they cannot carry that amount on the maximum 18-foot draft in the canal.

Lake Superior iron ore shipments by vessels to July 1 this year, 5,753,259 tons, compare with 15,737,573 tons in the same period in 1930, and 22,239,938 tons in 1929. In 1921 they were 6,371,227 tons. Stocks were heavy at the beginning of this season and shippers have decided on drastic reduction.

The Business Week In Washington

BICYCLE, velocipede and similar bells, imported only from Germany, will pay 70 per cent ad valorem duty instead of 50 per cent, under presidential order. Other bells, chimes and carillons will continue at the rate formerly in effect.

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A deficit of $903,000,000 closed the government fiscal year June 30. The gross debt was $16,801,000,000, an increase of $616,000,000 for the year.

□ □ □

No absolute general embargo on imports from Russia will be made by the treasury department, this being possible only by congress. Instead each individual case will be decided on its own merits as it comes up.

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Shippers' Regional Advisory boards estimate railroad car needs for third quarter will be 7,082,186 cars, a reduction of 724,851 cars, or 9.3 per cent, from the similar period of 1930. Third quarter will show only a slight increase from second, instead of the usual substantial growth.

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Additional taxation by the government to meet deficiencies under the present plan will be undertaken by the next congress only if business has improved sufficiently to make it advisable, says Senator Reed Smoot, chairman of the finance committee of the United States senate.

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The capacity of the water wheels in the constructed plants of the world, according to estimates made by the United States geological survey, was 23,000,000 horsepower in 1920, 29,000,000 horsepower at the end of 1923, 33,000,000 horsepower at the end of 1926, and 46,000,000

THEY FOUND PITTSBURGH INDUSTRY READY FOR PEACE OR WAR

To ascertain Pittsburgh's capacity for producing war materiel, army and navy officers recently inspected industrial plants in that district. Above they are pictured in front of the Westinghouse Research laboratory at Forest Hills, near East Pittsburgh, Pa.

horsepower at the end of 1930, an increase of 100 per cent in 10 years.

Developing Data on Classification of Coals

A survey is being made from which it is hoped to develop a "use classification of coals" that will assist buyers to obtain the most economical coal for their requirements and aid sellers in finding their most profitable markets. This is sponsored by the International Fuel Conference on Bituminous Coal, the American Society for Testing Materials, and the National Association of Purchasing Agents, under chairmanship of T. W. Harris, Jr., E. I. du Pont de Nemours & Co., Wilmington, Del.

The bureau of mines is co-operating and has distributed a questionnaire to 3500 consumers of coal. Every user of coal for stationary steam generation is invited to participate, and on completion of the study will receive a copy of the composite analysis.

Carloadings Forecast to Fall 9 Per Cent Under 1930

Washington—Carload shipments of the 29 principal commodities in the third quarter will be approximately 7,082,186 cars, a reduction of 724,851 cars or 9.3 per cent below the corresponding period in 1930, according to the Shippers' Regional Advisory boards.

Among commodities for which a decline is estimated are: Coal and coke, 8.2 per cent less; ore and concentrates, 28 per cent; iron and steel, 14.5 per cent; machinery and boilers, 19.6 per cent; and automobiles, 2.6 per cent less than the corresponding quarter of 1930.

By districts, decreases in carloadings are expected from all except the Southeast territory. Declines range from three points for the Southwest to 21 points in the Great Lakes regions.

Bar Iron Mill Wage Rates Are Unchanged

Wage rates in bar iron mills having contracts with the Amalgamated Association of Iron, Steel and Tin Workers will remain unchanged for July and August, puddlers receiving $10.30 a ton, the rate in effect since Jan. 1, 1931. The average sales price of bar iron in May and June was 1.70c per pound. Further comparisons:

	1931	1930	1929
Jan.-Feb.	1.70c	1.95c	2.00c
March-April	1.70c	1.90c	2.00c
May-June	1.70c	1.90c	2.00c
July-Aug.	.....	1.80c	2.00c
Sept.-Oct.	.....	1.80c	2.00c
Nov.-Dec.	.....	1.70c	2.00c
Yearly average.		1.841c	2.00c

Average Output of Pig Iron Per Blast Furnace Up 20 Per Cent in 5 Years

FIVE years ago a blast furnace that could produce 600 tons of pig iron per day was considered "large." Today more than ten are capable of producing 1000 tons or more, and at least one has capacity for 1500 tons. In the past five years 72 stacks have been remodeled and enlarged, and many small units have been abandoned. Blast furnace practice has been improved.

So much is history; now for a perspective on results. The average production of coke pig iron blast furnaces, per day, has increased 102.6 gross tons; that is, from 500.9 tons in 1926 to 603.5 tons in 1930. The gain is 20.4 per cent.

The largest increase for any one district is noted in Alabama and Tennessee, where the output has risen 138.8 tons, or 40.8 per cent. In 1926 the average in these states was 340.1 tons, and in 1930, 478.9 tons.

The Atlantic states experienced the next largest increase, 137.5 tons, or 35.5 per cent. In this group are the furnaces in Massachusetts, eastern New York, eastern Pennsylvania, Maryland and Virginia. Their average production per day in 1926 was 387 tons, and in 1930 it was 524.5 tons.

The lake states had the least increase, 91.6 tons, or 16.8 per cent. It must be explained for the furnaces in this group, however, that their average output in 1926, 545.1 tons, was larger than that for either the south or Atlantic furnaces in 1930, after all their gain. The actual average for the lake state furnaces in 1930 was 636.7 tons. In this group are the producers in western New York, western Pennsylvania, Ohio, West Virginia, Kentucky, Indiana, Illinois, Michigan, Wisconsin and Minnesota.

The American Iron and Steel institute, New York, began tabulation of these figures this year. It is significant that the accompanying table, from the institute's forthcoming statistical report, shows consecutive annual increases in average production per furnace in each of the three districts for the past five years.

Average Output of Coke Pig Iron, Per Blast Furnace Day

	Furnaces in blast	Days in blast	Production Gross tons	Average for U. S. Gross tons	South Gross tons	Atlantic Gross tons	Lake Gross tons
1926	264	76,923	38,534,537	500.9	340.1	387.0	545.1
1927	240	67,854	35,693,663	526.0	370.1	415.5	571.0
1928	235	65,684	37,258,688	567.2	397.9	469.6	606.3
1929	236	71,122	41,619,022	585.2	426.1	488.5	620.3
1930	201	51,242	30,924,327	603.5	478.9	524.5	636.7

For states included in the three groups, south, Atlantic and lake, see article above.

Babbitt Metal Decline Continues for Third Month

Babbitt metal output, while at a low for 1931 in May, yet totaled 2,408,781 pounds and did not show any decided decline. Loss was due to recession in production of the metal for sale, production for producers' own use having increased, as department of commerce tabulation shows:

In Pounds

1930	(a) Total production	(b) Sales	(c) Production for own use
May	4,072,853	3,139,884	932,969
5 mo.	22,066,089	17,118,138	4,947,951
June	3,912,744	2,742,435	1,170,309
July	3,060,962	2,160,505	900,457
Aug.	2,918,043	1,964,213	953,830
Sept.	8,892,287	1,850,468	1,041,819
Oct.	3,101,187	2,068,544	1,032,643
Nov.	2,695,087	1,904,256	790,831
Dec.	2,106,522	1,459,208	647,314
Year	42,752,921	31,267,767	11,485,154
1931			
Jan.	2,855,693	2,089,574	766,119
Feb.	2,507,222	1,819,749	687,473
March	2,661,211	1,829,477	831,734
April	2,560,243	1,844,311	715,932
May	2,408,781	1,678,204	730,577
5 mo.	12,993,150	9,261,315	3,731,835

(a) By 43 plants. (b) By 33 manufacturers who produce for sale, including 5 who also report consumption of own metal. (c) By 15 establishments which manufacture their own metal, including 5 which also produce for sale.

Steel Institute's Annual Statistical Report Issued

The annual statistical report of the American Iron and Steel Institute for 1930 has just been published. It contains complete statistics of the iron

and steel industry for the United States and Canada for 1930 and prior years; also foreign statistics for leading countries for iron ore, pig iron and ferroalloys, and steel ingots and castings from 1905 to 1930 so far as available. An analysis of the tonnage of iron and steel products exported, showing exports for the years 1926-1930, inclusive, to certain countries and by geographical divisions, also is included.

May's Structural Orders Far From Encouraging

Though shipments of fabricated structural steel held at a relatively stable rate in May, bookings declined to a low for 1931 and were the same as in December of 1930. The following is an estimate by months for the entire country, based on actual reports of 224 fabricators reporting bookings and 218 interests reporting shipments to the department of commerce:

	Bookings		Shipments	
1930	Tonnage	Per cent capacity	Tonnage	Per cent capacity
May	279,200	69.8	265,200	66.3
5 mo.	1,245,200	62.3	1,324,000	66.2
June	253,600	63.4	280,000	70.0
July	270,000	67.5	274,800	68.7
Aug.	252,000	63.0	262,400	65.6
Sept.	155,600	38.9	243,200	60.8
Oct.	209,200	52.3	239,200	59.8
Nov.	151,200	37.8	195,200	48.8
Dec.	152,800	38.2	168,400	42.1
Year	2,689,600	56.0	2,987,200	62.2
1931				
Jan.	162,400	40.6	172,000	43.0
Feb.	158,400	39.6	166,400	41.6
Mar.*	184,400	46.1	151,200	37.8
April*	292,800	73.2	158,400	39.6
May	152,800	38.2	148,000	37.0
5 mos.	950,800	47.5	796,000	39.8

*Revised.

Slump Is Sharp in May Pittsburgh River Traffic

Iron and steel river shipments in the Pittsburgh district declined sharply during May, movement over the Ohio river being the smallest since December, 1930. Tonnage shipped over the Monongahela river was the smallest in several years. Comparative monthly figures follow:

1930	Allegheny	Monongahela	Ohio
May	.....	117,942	128,502
5 mo.	1,410	438,984	444,016
June	700	137,603	144,099
July	1,125	132,161	147,558
August	2,600	96,498	107,948
Sept.	5,100	106,079	109,129
Oct.	11,490	105,451	138,109
Nov.	17,850	75,202	95,644
Dec.	3,800	46,972	50,403
Year	44,075	1,133,950	1,236,906
1931			
Jan.	50	90,405	88,089
Feb.	.....	58,847	75,264
March	.....	76,137	104,792
April	1,250	57,751	91,570
May	1,330	35,373	59,611
5 mo.	2,630	318,513	419,326

June Ingot Rate, Off 17 Per Cent, Lowest Since December

WHEN steel ingot production in June descended to a daily rate of 79,843 gross tons it plumbed a depth not hitherto reached this year. From the 96,365-ton daily average of May, the June figure is a decline of 17 per cent, the sharpest for any month since production began to decline in 1929.

June output of open-hearth and bessemer steel ingots, estimated by the American Iron and Steel institute at 2,075,910 gross tons, represented only 37.58 per cent of capacity. By comparison, May output of 2,505,485 tons engaged the industry at 45.36 per cent. In June, 1930, steel plants were averaging 136,741 tons daily and were operating at 68.30 per cent of capacity.

With June rates officially in, steel output for the first half year is placed at 15,258,519 gross tons, indicating that if 1931 is to be much better than a 30,000,000-ton steel year the last six months must shoulder a considerable burden. In 1930, when the year's total was 39,286,287 tons, output in the first half was 23,578,619 tons.

For the first half of 1931, steelmaking operations for the industry as a whole have averaged 46.34 per cent; in the first half of 1930 the average was 76.09 per cent.

Billets Shipped by Boat

New York—Shipments of pig iron and billets on the New York state barge canal for the week ended June 27 totaled 1200 tons. The total for the season to date is 27,836 tons. The first large shipment ever received in Utica, N. Y., via the canal route, from a Great Lakes port is reported. This consisted of 600 tons of steel from Detroit in one of the motorships controlled by the Seaboard-Great Lakes Corp. The consignee stated that the time in transit was as good as that on his all-rail shipments, and the transportation cost was about two-thirds of the rail charge.

Steel Ingot Production—1930-31

95.21 Per Cent of Industry Reporting
Gross Tons

1930	Open-hearth	Bessemer	Monthly output companies reporting	Calculated monthly output all companies	No. of working days	Approximate daily output all companies	Per cent operation
Jan.	3,157,761	441,572	3,599,333	3,778,235	27	139,935	69.89
Feb.	3,335,428	508,618	3,844,046	4,035,111	24	168,130	83.98
Mar.	3,513,269	539,616	4,052,885	4,254,331	26	163,628	81.73
Apr.	3,405,671	509,234	3,914,905	4,109,492	26	158,057	78.95
May	3,265,353	528,968	3,794,321	3,982,915	27	147,515	73.68
June	2,849,079	407,586	3,256,665	3,418,535	25	136,741	68.30
6 mo.	19,526,561	2,935,594	22,462,155	23,578,619	155	152,120	76.09
July	2,430,128	353,723	2,783,851	2,922,220	26	112,393	56.14
Aug.	2,541,367	374,467	2,915,834	3,060,763	26	117,722	58.80
Sept.	2,275,910	429,975	2,705,885	2,840,379	26	109,245	54.56
Oct.	2,165,341	399,704	2,565,045	2,692,539	27	99,724	49.81
Nov.	1,807,133	300,337	2,107,470	2,212,220	25	88,489	44.20
Dec.	1,659,026	226,788	1,885,814	1,979,547	26	76,136	38.03
Total	32,405,466	5,020,588	37,426,054	39,286,287	311	126,322	63.09
1931							
Jan.	2,044,298	296,620	2,340,918	2,458,689	27	91,063	42.86
Feb.	2,085,529	296,974	2,382,503	2,502,366	24	104,265	49.08
Mar.	2,504,060	346,137	2,850,197	2,993,590	26	115,138	54.20
Apr.	2,275,404	316,668	2,592,072	2,722,479	26	104,711	49.29
May	2,083,833	301,639	2,385,472	2,505,485	26	96,365	45.36
June	1,730,109	246,365	1,976,474	2,075,910	26	79,843	37.58
6 mo.	12,723,233	1,804,403	14,527,636	15,258,519	155	98,442	46.34

Figures exclude crucible and electric ingots. Operating percentages for 1930 are based on capacity of 62,265,670 gross tons as of Dec. 31, 1929; for 1931 on capacity of 66,069,570 gross tons as of Dec. 31, 1930.

Iron Rate Is Lowest Since 1922; 14 Furnaces Out

SHOWING the effects of 8 blast furnaces blown out in May and 14 more in the month just past, production of coke pig iron in June dropped to the lowest daily rate in more than nine years. At the same time, the fact that many of 14 furnaces became inactive late in the month forecasts a still poorer showing when the returns for July are compiled.

The average daily rate for June was 54,599 gross tons and this was the smallest figure since January,

AVERAGE DAILY PRODUCTION

	1931	1930	1929	1928
Jan.	55,337	91,573	110,742	92,113
Feb.	61,114	101,640	114,942	99,954
Mar.	65,448	104,930	119,662	103,199
Apr.	66,986	106,371	122,106	106,066
May	64,355	104,564	125,753	106,219
June	54,599	97,817	123,887	102,745
July	.....	85,110	122,016	99,120
Aug.	.....	81,455	120,845	101,193
Sept.	.....	75,893	116,548	102,120
Oct.	.....	69,851	115,747	108,824
Nov.	.....	62,182	106,081	110,155
Dec.	.....	53,732	91,513	108,702
Ave.	61,315	86,141	115,808	103,365

1922, when operations following the 1921 depression had recovered to a rate of 53,090 tons. Compared with the 64,355 tons of May, the June rate slipped off 9756 tons, or 15.2 per cent. The rate for June one year ago was 97,817 tons, while in 1929 it was 123,887 tons.

Total output for June was 1,637,998 tons, which compared with the 1,995,001 tons for May, was a decrease of 357,003 tons, or 17.9 per

JUNE PIG IRON PRODUCTION

	No. in blast last day of month June	May	Total tonnage made Merchant	Nonmerchant
Ohio	22	24	58,573	313,702
Pennsylvania	27	32	54,049	418,758
Alabama	12	13	95,750	82,846
Illinois	7	10	52,104	100,173
New York	5	5	38,784	38,867
Colorado	1	2		
Indiana	6	7		
Maryland	3	3	9,072	227,479
Virginia	0	0		
Wisconsin	0	0		
Kentucky	1	1		
Massachusetts	1	1		
Tennessee	0	0	17,361	71,179
Utah	1	1		
West Va.	2	2		
Michigan	3	4		
Minnesota	0	0	19,000	30,976
Missouri	0	0		
New Jersey	0	0		
Spiegel and ferro, all states	....	....	4,507	4,818
Total	91	105	349,200	1,288,798

cent. June, however, was a one-day shorter month than May.

For the first half of 1931, production was considerably below normal. The total was 11,098,122 gross tons, or 7,206,492 tons below the 1930

MONTHLY PRODUCTION

	1931	1930	1929
Jan.	1,715,443	2,838,751	3,433,028
Feb.	1,711,192	2,845,937	3,218,376
Mar.	2,028,906	3,252,822	3,709,518
April	2,009,582	3,191,119	3,663,167
May	1,995,001	3,241,477	3,898,344
June	1,637,998	2,934,508	3,715,104
July	.....	2,638,441	3,782,511
Aug.	.....	2,525,105	3,746,198
Sept.	.....	2,276,781	3,496,454
Oct.	.....	2,165,374	3,588,146
Nov.	.....	1,865,458	3,182,420
Dec.	.....	1,665,715	2,836,917
Total	11,098,122	31,441,488	42,270,183

six-month total of 18,304,614 tons. The 1931 figure represented only 60.5 per cent of the previous year's total.

In June, only 3 furnaces resumed activity, while 17 were blown out or banked. Of the merchant class, 2 were blown in and 2 blown out; of the nonmerchant or steelworks group, 1 was blown in and 15 blown out. Since the 1931 high point of 116 active furnaces on the last day of March, 25 units have become inactive in the three-month period. Furnaces active on April 30 totaled 113 and this shrank to 105 on May 31.

During the last five years, average production of blast furnaces has increased from 500.9 tons per day in 1926 to 603.5 tons per day in 1930, consequently it is no longer an accurate index to compare current stack activities with those of past years.

Relating production to capacity,

RATE OF OPERATION

(Relation of Production to Capacity)

	1931[1]	1930[2]	1929[3]	1928[4]
January	38.4	65.0	79.0	66.8
February	42.5	72.1	82.2	72.5
March	45.4	74.5	85.5	74.8
April	46.5	75.4	87.4	76.8
May	44.7	74.2	89.8	77.0
June	37.9	69.3	88.5	74.4
July	.....	60.3	87.2	71.8
August	.....	57.8	86.4	73.3
September	.....	53.8	83.3	74.1
October	.....	49.6	82.6	78.9
November	.....	44.1	75.8	79.8
December	.....	38.1	65.5	78.8

[1]Based on capacity of 52,515,875 tons Dec. 31, 1930; [2]on capacity of 51,490,680 tons; [3]on capacity of 51,069,895 tons; [4]on capacity of 50,329,750 tons. Capacities by American Iron and Steel institute.

operations in June were at the rate of 37.9 per cent; compared with 44.7 per cent in May and 46.5 per cent in April.

Furnaces blown in during June were: In Ohio: Jisco, Jackson Iron & Steel Co. In Pennsylvania: Cambria F, Bethlehem Steel Co. In New York: One Buffalo, Hanna Furnace Corp.

Among the furnaces blown out were: In Ohio: Haselton No. 2, Republic Steel Corp.; Youngstown D, Youngstown Sheet & Tube Co.; Lorain No. 5, National Tube Co. In Pennsylvania: Cambria H and K, Bethlehem Steel Co.; Shenango No. 3, Shenango Furnace Co.; Duquesne Nos. 3 and 4 and Newcastle No. 2, Carnegie Steel Co. In New York: Lackawanna F, Bethlehem Steel Co. In Alabama: Tuscaloosa, Gulf States Steel Co. In Colorado: One Minnequa, Colorado Fuel & Iron Co. In Illinois: South Works No. 2 and E and Joliet No. 4, Illinois Steel Co. In Indiana: Gary No. 3, Illinois Steel Co. In Michigan: One Detroit, Hanna Furnace Corp.

With the Sloss-Sheffield Steel & Iron Co. having abandoned its Hattie, Ensley and Sheffield furnaces at Sheffield, Ala., and its two Etowah furnaces at Gadsden, Ala., the number of potential furnaces in the United States is reduced from 307 to 303.

Swasey Makes New Gift To Engineering Foundation

Ambrose Swasey, founder of the Engineering Foundation, New York, has just added $250,000 to his previous gifts to the organization, thereby bringing their total to three-quarters of a million dollars. The gift was announced at a recent dinner in New York attended by more than 30 presidents and former presidents of the four major engineering societies, United Engineering Trustees, the Engineering Foundation and other nationally prominent engineers.

Mr. Swasey, born in Exeter, N. H., nearly 85 years ago, is the surviving founder of the firm of Warner & Swasey Co., Cleveland. The Engineering Foundation was founded in 1914 on the basis of his conception of a research instrumentality. It was established by the national societies of civil, mining and metallurgical, mechanical and electrical engineers.

Ship Steel to St. Louis

St. Louis—The first shipment of steel to be brought to St. Louis by barge line has arrived at the municipal docks, carried by the Union Barge Line, Pittsburgh, on its initial trip. In the cargo was 600 tons of steel, consigned to the Schlueter Mfg. Co. Shipment represented a saving in freight of approximately $1300 over the rail rate from Wierton, W. Va., the shipping point.

Industrial Men in the Day's News

Victor W. Peterson, President and General Manager, Shafer Bearing Corp.

AS advertising manager he became interested in automotive production and design problems, finally concentrating upon design and engineering.

EMPLOYED as general manager for a confectionery company he had opportunity to apply practically some of his theoretical engineering ideas.

LAST year he entered the automotive products field and there he has developed time-saving and labor-saving devices.

THROUGH an advertising avenue Victor W. Peterson, president and general manager of the Shafer Bearing Corp., and chief executive of Sherman-Manson Mfg. Co. and Hannifin Mfg. Co. Chicago, entered the field of engineering production and design. As advertising manager for a Chicago automobile accessory firm some years ago, he was brought into contact with such a multiplicity of production and design problems he became sufficiently interested to concentrate upon design and engineering.

He later as general manager for a confectionary company had opportunity to apply his engineering ideas to practice. One of his first accomplishments was to design a mechanical system for mixing and pre-melting sugar and corn syrup at the first floor receiving point in the plant from where it was pumped to the upper floors. Previous practice involving trucking materials to the top floor for pre-melting required at least ten men whereas the new plan was handled easily by one.

Less than a year ago he was elected president and general manager of the Shafer Bearing Corp., where again he placed himself in close contact with products that succeeded through their design. In this capacity, Mr. Peterson has been actively engaged in extending the range of sizes and standard types of mountings of roller bearings for machine and general industrial use. He has also directed intensive research in connection with problems of roller bearing applications to railroad equipment and service.

In addition to these responsibilities, he continues as head of the Sherman-Manson Mfg. Co., producing tubular steel products, and the Hannifin Mfg. Co., which specializes in air-operated production machinery. With the latter organization, Mr. Peterson personally has directed the engineering and development work for various types of air-operated chucking equipment, air-operated arbor presses, and wedge type rivet presses. A 4-jaw duplex chuck is one of the most interesting products developed under this supervision. With this chuck, work of irregular shape, rough castings, and forgings can be centered automatically across two diameters, with uniform jaw pressure applied on four sides.

Mr. Peterson's numerous activities are exacting, but his keen interest and indomitable energy have helped him to accomplish much in the fields of design, production and research in a varied line of products.

RALPH M. HOFFMAN, for eight years manager of the Seattle office of the Pacific division, Link-Belt Co., Chicago, has been appointed vice president of the company and sales manager of that division with headquarters at 400 Paul avenue San Francisco. He succeeds Harold H. Clark, who retired June 1.

Mr. Hoffman was graduated from the University of Minnesota in 1911. He joined the Meese & Gottfried Co., Seattle, and later opened an office for it in Vancouver. When that interest merged with the Pacific division of Link-Belt, he was made manager of the Seattle office.

Mr. Clark retires as vice president and assistant secretary of the Pacific division after 30 years service in the interest of Link-Belt and its subsidiaries. He was graduated from Cornell university in 1900 and joined Link-Belt at Chicago as mechanical engineer in the drafting room. He was promoted to salesman but left for a short time in 1909 and moved to Los Angeles where in 1910 he established a sales agency for Link-Belt and others. In 1913 he established a regular branch office for the company there. In 1920 the west coast branch offices were organized as the Link-Belt Pacific Co., with Mr. Clark as vice president and treasurer. When Meese & Gottfried Co. was purchased, the Pacific organization was known as Link-Belt Meese & Gottfried Co., which name style later was changed to Link-Belt Co., Pacific division, and Mr. Clark was made vice president and assistant secretary.

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Walter B. Enck, formerly vice president of Donner Steel Co. Inc., Buffalo, now a subsidiary of Republic Steel Corp., Youngstown, O., has been appointed sales manager of Reliance Steel Products Co., Cleveland, manufacturer of open-hearth furnaces and water cooled furnace furnace equipment. Mr. Enck has been identified with the steel industry for the past 25 years. He was associated with American Sheet & Tin Plate Co., subsidiary of United States Steel Corp., then with Cambria Steel Co. and Pennsylvania Steel Co., now subsidiaries of Bethle-

hem Steel Corp., and then with the Donner company.

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M. D. Thatcher has been appointed general manager of Toledo Saw & Grinding Co., Toledo, O.

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Joseph E. Slater now is a member of Coverdale & Colpitts, New York, consulting engineers.

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H. A. Truslow, vice president, Armstrong Cork Co., Lancaster, Pa., has been elected treasurer as well, to fill the vacancy caused by the death of William H. Larimer.

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Phillips Isham, who has represented Woodward Iron Co., Woodward, Ala. in New York for 25 years, has also been appointed New England sales agent.

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F. J. Conlin, identified with the Columbus, O., branch of Toledo Scale Co., Toledo, O., for the past 12 years, was recently appointed district manager of the Columbus territory.

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Frank W. Jones, for many years Philadelphia sales manager, Eastern Steel Co., Pottsville, Pa., whose plant recently was sold in receivership proceedings, now is general manager of Hanover Wire Cloth Co., Hanover, Pa.

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M. J. Kearins, formerly associated with Whitman & Barnes Inc., Detroit, now is president and general manager of the combined Latrobe Tool Co., Latrobe, Pa., and J. M. Carpenter Tap & Die Co., Pawtucket, R. I. His headquarters will be at Latrobe.

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E. E. Knox, formerly sales manager, Bury Compressor Co., Erie, Pa., and who has been with that company for 27 years, has established headquarters in the Ariel building, Erie, as a dealer in new and first class used compressors, power equipment, etc.

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Leslie Allen, formerly manager of the Buffalo district, McClintic-Marshall Corp., Bethlehem, Pa., has been appointed Pittsburgh district manager to succeed the late Thomas L. Cannon.

J. K. Bard has been appointed manager of works of the Buffalo district.

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Frederick M. Feiker, New York, named by President Hoover to be director of the bureau of foreign and domestic commerce, department of commerce, Washington, assumed office July 1. He succeeds William L. Cooper, who is returning to London as American commercial attache.

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Carl B. Rettig has become associated with the sales department, Mahoning Valley Steel Co., Niles, O., succeeding Charles A. Thomas, who recently resigned from the Mahoning Valley company to become associated with Thomas Steel Co., Warren, O., maker of cold-rolled strip steel. Mr. Rettig formerly had been sales manager, Waddell Steel Co., Niles, and later was with Empire Steel Corp., Mansfield, O., as eastern district sales manager.

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Wilbur J. Wright, who for 20 years past has been with E. F. Houghton Co., Philadelphia, has established headquarters at 18151 Clifton boulevard, Lakewood, O., as manufacturers' agent, specializing in oils, leather, leather packing, carburizer and Celeron bearings.

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William V. Turner, vice president and director of the Turner Construction Co., Philadelphia, has resigned, effective July 1. J. Archer Turner has been elected to succeed him in both capacities and also will be in charge of the Philadelphia office of the company.

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George D. Swift, secretary-treasurer, Oliver Iron Mining Co., Duluth, subsidiary of United States Steel Corp., resigned July 1. He has been succeeded as secretary by W. W. Watson, assistant secretary since 1912. J. T. Melvin, assistant treasurer since 1916, becomes treasurer.

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E. H. Lang has been appointed factory superintendent of the Sharon, Pa., works of the Westinghouse Electric & Mfg. Co., East Pittsburgh, Pa. He succeeds M. L. Fawcett, whose promotion to manager at Sharon was noted in STEEL last week. Mr. Lang formerly was assistant factory superintendent.

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Dexter A. Tutein has returned to New York after representing Harris Forbes & Co. in Berlin, Germany, for 18 months. He now is connected with Chase Harris Forbes Corp., 60 Cedar street, New York. Mr. Tutein at one time was connected with E. Arthur Tutein Inc., formerly well known in the merchant pig iron trade.

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Eugene C. Clarke was elected president of Chambersburg Engineering Co., Chambersburg, Pa., at a recent directors' meeting. He succeeds William Herbert Derbyshire Jr., now chairman of the board.

Arthur G. Dickson was elected vice president. Other officers remain unchanged.

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Stewart M. Marshall, who prior to January, 1930, was with Perin & Marshall, New York, consulting engineers, now Perin Engineering Co., and who has been abroad for 18 months has returned to the United States. His headquarters for the present are at 11 West Forty-second street, New York, but a definite announcement concerning future plans is expected shortly.

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Nicholas Gerten, formerly vice president, Blaw-Knox International Corp., New York, has been elected its president. He joined the Blaw-Knox organization in January, 1928, as sales manager of the Blaw-Knox International Corp. He previously was engineer in the technical department, Mitsubishi Co., New York, having previously been with Allied Machinery Co., a subsidiary of American International Corp., engaged in exporting American machinery.

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Morris Davidson of Stockton, Calif., was re-elected president, Pacific Coast chapter, Institute of Scrap Iron and Steel Inc., New York, at the second annual meeting June 25. Other officers elected are: O. Goldblatt, Sacramento, Calif., vice president; Phil Scheibner, Oakland, Calif., secretary-treasurer; Lester Finklestein, Los Angeles, J. Marcovitz, Oakland, Louis Rothenberg, Oakland; and T. Rosenthal, Los Angeles, members of the executive committee.

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Leon R. Clauson, president, J. I. Case Co., Racine, Wis., has been re-elected president of the Racine Manufacturers association for a sixth term. Angus R. Callender, president, Badger Foundry Co., has been re-elected first vice president, and A. R. Janes, president, Standard Foundry Co., second vice president. Taylor Jeliffe, general manager, Wisconsin Metal Products Co., was elected treasurer to succeed A. F. Walker, president, American Skein & Foundry Co. The association represents more than 100 industrial plants in Racine.

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C. G. Bunnell, purchasing agent, Westinghouse Electric & Mfg. Co., East Pittsburgh, Pa., has been assigned additional purchasing responsibilities. In addition to the duties of the purchasing agent, which he has discharged for eight years, he now will be responsible for the proper co-ordination of buying and buying procedure between all plants of the Westinghouse electric group at Pittsburgh, East Pittsburgh, Sharon, Derry and South Philadelphia, Pa., Newark and Bloomfield, N. J., East Springfield and Chicopee Falls, Mass., Attica, N. Y., Cleveland and Mansfield, O., St. Louis, and Emeryville, Calif. He has been with the company since 1905.

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Eugene Keller Jr., until recently district manager of the Philip Carey Co., at Memphis, Tenn., has been appointed a regional manager of Armco Culvert Manufacturers association, Middletown, O. He will supervise region No. 4, which comprises Alabama, Arkansas, Florida, Georgia, Louisiana, Mississippi, North and South Carolina, Oklahoma, Tennessee and Texas. For the present his headquarters will be at Nashville, Tenn. After college Mr. Keller was general superintendent for about a year for a general engineering contracting firm of Nashville. He then entered the contracting business for himself but became affiliated with Philip Carey Co. in 1924.

Obituaries

JOSHUA A. HATFIELD, 68, president and director, American Bridge Co., New York, subsidiary of United States Steel Corp., died July 4 in Presbyterian hospital, that city. Born in Philadelphia, he was graduated from Hill school, Pottstown, Pa., in 1880 and became office boy for Pottstown Iron Co. He was soon made clerk and later became general sales agent, serving until 1896. The following year he became head of the sales force, Pencoyd Iron Works, Philadelphia, and in 1898 removed to New York to act as company agent. He became asistant to the president in 1900 and

Joshua A. Hatfield

was made president in 1901. When the United States Steel Corp. was organized Mr. Hatfield became president of American Bridge Co. of New York, and director of American Bridge Co. of New Jersey. When the two were consolidated in 1914 he became vice president, and in 1927 was elected president. He also was president and director, American Improvement Co., the A. & P. Roberts Co., and the New Jersey Steel & Iron Co. He was a director of Pencoyd & Philadelphia railroad and a member of numerous clubs, musical societies and other organizations.

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Prof. George F. Swain of Brookline, Mass., of the engineering school, Harvard university, died July 2 at Holmwood, Ashland, N. H. He was internationally known in the engineering field and formerly was a professor at Massachusetts Institute of Technology.

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John C. Sullivan, 75, retired construction engineer who supervised erection of large factories in Passaic, N. J., died June 30 in that city. He was a former vice president and general manager of the Flint Construction Co., of Palmer, Mass., retiring in 1914.

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Col. John A. Currie, 63, managing director of Imperial Steel Corp., Collingwood, Ont., and prominent in military, industrial and political affairs of Canada, died at Miami, Fla., June 28. During his early days he was engaged in journalism but later turned to the promotion of industries. He rendered distinguished service overseas during the World war.

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Charles H. Jockmus, 70, sole proprietor of Ansonia Mfg. Co., Ansonia, Conn., maker of machine screw products and electrical devices for the past 38 years, died at his New Haven, Conn., home June 29. He was a member of the New Haven Yacht club, of which he was commodore in 1927-28. He also was a member of the Ansonia board of education.

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James Tod McCall, 74, founder and president of Drummond, McCall & Co. Ltd., Montreal, Que., pig iron merchant, died July 1. Born in Scotland, he engaged for some years in the iron and steel industry in Glasgow. He located in Canada in 1879, and two years later he entered into partnership with the late George E. Drummond and established the firm which still bears that name. Mr. McCall also was a director of Canada Iron Foundries Ltd., MacKinnon Steel Corp., Royal Trust Co. and Canada Creosoting Co.

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W. Vernon Phillips, 56, prominent in the iron and steel scrap industry, died July 2 at Philadelphia. He was president of Phillips Bros. and held other executive positions, including the presidency of the Phillips-Lafitte Co., importer of welding and brazing compounds, and the chairmanship of Perry Buxton Doane Co., Philadelphia, dealer in scrap.

During the World war he was chairman of the American Iron and Steel institute's committee on scrap iron and steel and chief of the war industry board's iron and steel scrap section.

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William G. Perrigo, 54, president, Northwestern Molding Sand Co., Beloit, Wis., and Lakeside Railway Signal Co., Rockford and Freeport, Ill., died July 3 at Rochester, Minn. Mr. Perrigo also was connected with Woodruff & Edwards Co., Elgin, Ill., gray iron foundry, of which he had been secretary, and was interested in other business enterprises. A native of Beloit, Mr. Perrigo at 18 began work with the Beloit plant of Fairbanks, Morse & Co., Chicago, where he remained 27 years. The last ten years of that period he was general superintendent of the windmill and forging shop.

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Sir Hugh Bell, 87, whose death in London, England, June 28, was briefly noted in STEEL of July 2, has been prominent in British iron and steel industry as well as in coal and shipping circles for many years. He was born at Walker-on-Tyne, England, Feb. 10, 1844, and his father, after managing the Walker Ironworks, started Clarence Ironworks, which in 1872 became Bell Bros. Ltd. In 1899 the business was made an open

Sir Hugh Bell

market stock proposition with Dorman, Long & Co. Ltd., which later acquired ordinary share capital and which subsequently acquired North Eastern steelworks. When the elder Bell died in 1904, Sir Hugh became chairman and managing director of Bell Bros. Ltd. He also was chairman of Pearson & Dorman Long Ltd., Horden Collieries Ltd., and Channel Steel Co. Ltd., vice chairman and director, Dorman, Long & Co. Ltd., director of Brunner, Mond & Co. Ltd., Yorkshire Insurance Co. Ltd., London North Eastern railway, North Eastern Steel Co. Ltd., Sir B. Samuelson & Co. Ltd., Synthetic Ammonia & Nitrates Ltd., Wilsons & North Eastern Railway Shipping Co. Ltd., and chairman of Slag Power Ltd.

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Richard Gilpin Wood, 83, former chairman of the Alan Wood Steel Co., Conshohocken, Pa., died June 30. He retired from active business three years ago. Born at Woodale, near Wilmington, Del., he with his father manufactured sheet iron at McKeesport, Pa.,

as a member of the W. Dewees Wood Co. He remained with this company until 1901, when the McKeesport plant of the company was acquired by American Sheet Steel Co.

In 1904, he became vice president and director of the Alan Wood Iron & Steel Co., which later became Alan Wood Steel Co., and in 1905 was appointed general manager of the steel works department, Ivy Rock, Pa. He later became president of the company and in 1920 became chairman of the board.

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Francis J. Nankivell, 38, electrical and mechanical engineer of New York, died July 6 near Shokan, N. Y.

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George A. Newman, secretary, Syracuse Chilled Plow Co., Syracuse, N. Y., died there recently.

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Charles D. Fleming, 57, senior vice president, Cleveland Tractor Co., Cleveland, died in that city July 1. Since 1920 Mr. Fleming had been an executive of the tractor concern, coming from the Studebaker Corp., South Bend, Ind., where he was assistant treasurer.

□ □ □

Dr. Edward Goodrich Acheson, 75, inventor of carborundum, died July 6 in New York. Born in Washington, Pa., he was educated at Bellefonte academy and started work at 16 as timekeeper at a blast furnace at Monticello, Pa. He then held various positions and finally was employed by Thomas A. Edison at Menlo Park, N. J. In 1899 he formed the Acheson Graphite Co., and later organized numerous other companies to exploit graphite and similar products. Dr. Acheson won many honors from scientific societies, holding memberships in more than 200.

□ □ □

Truman P. Gaylord, 60, vice president, Westinghouse Electric & Mfg. Co., East Pittsburgh, Pa., died July 5 in Shelby, Mich. Born in that city, he attended the University of Michigan and the Armour Institute of Technology, receiving the degree of electrical engineer from the latter institution. Mr. Gaylord was professor of electrical engineering at Armour institute until 1898, when he became associated with the Commonwealth Edison Co., Chicago. He joined the Westinghouse company in 1899 as a salesman, rising to the vice presidency. He was president of the Pittsburgh chamber of commerce from 1927 to 1928.

Fulton in Merger Rumor

Reports not fully verified assert that directors of the Fulton Iron Works, St. Louis, and the Goslin-Birmingham Mfg. Co., Birmingham, Ala., have agreed on the acquisition of the former by the latter.

Here and There in Industry

HAYES WHEELS & FORGINGS LTD., Toronto, Ont., most of the output of which hitherto has been in connection with the motor car industry, has added production of electric refrigerators to its diversified line of products. A simple motor has been developed for the refrigerator for quick and hard freezing.

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Dominion Steel & Coal Corp., Sydney, N. S., on June 24 turned out the heaviest iron casting ever made in Canada, when a cast iron ingot mold weighing 60 tons was made.

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Arthur G. McKee & Co., engineers and contractors, Cleveland, have received a contract for the construction of a cracking unit for the Kendall Refining Co., Bradford, Pa. The new unit, which will cost $350,000, will increase the cracking capacity of the company's refinery by 1250 barrels daily.

□ □ □

G. E. McNamee Co., 1197 East North avenue, Milwaukee, wholesale scrap metal dealer, has changed its name to Monteith Iron & Steel Co. Robert Monteith Jr. is secretary.

□ □ □

Handy Parts Stores, Dayton, O., has been organized by Edwin J. Leen, who has also acquired the Dayton Motor Rebuilders Co. This gives a complete motor parts and automotive machine service station.

□ □ □

Republic Iron & Metal Co., Erie, Pa., of which the late Joseph Levick was president, will be continued by M. Mayo Levick and Harry E. Levick. The company deals in steel and iron scrap and carries on a plant dismantling business.

□ □ □

Jenkins Machine Co., Sheboygan, Wis., manufacturer of tools and equipment for woodworking plants, has filed a voluntary petition in bankruptcy in the federal court at Milwaukee, giving liabilities as $296,675 and assets $237,007.

□ □ □

Youngstown Pressed Steel Co., Warren, O., subsidiary of the Sharon Steel Hoop Co., Sharon, Pa., is installing electric furnaces and other equipment for the manufacture of enameled steel squares in colors as a substitute for tile in wall covering.

□ □ □

Steel & Tubes Inc., Cleveland, has appointed A. J. Brandt of the Cleveland office western sales manager, with offices at 1330 Peoples Gas building, Chicago. He will have supervision of Chicago, St. Louis, Minneapolis and Kansas City districts.

□ □ □

Woodward Iron Co., Woodward, Ala., has appointed Philip Ishan, 30 Church street, New York, its agent for New England in addition to its New York territory. A. O. Henshaw, Boston, former representative in New England, died recently after having served in that capacity many years.

□ □ □

Lee C. Moore & Co. Inc., Pittsburgh, manufacturer of oil and gas well derricks, now is engaged in the fabrication of structural steel for building purposes. George L. Ballou has joined the company as sales engineer. He formerly was identified with the Memphis Steel Construction Co.

□ □ □

Ero Mfg. Co., 2234 Ogden avenue, Chicago, automotive accessories and specialties, has leased the 7-story and basement building at 714-18 West Monroe street, containing about 110,000 square feet of working space, for a term of years. The company will move into its new quarters about Aug. 1. The divisions of the plant thus will be housed under one roof, with floor space more than double.

□ □ □

Joseph T. Ryerson & Son Inc., Chicago, and Paul H. Petersen Inc., 420 Lexington avenue, New York, have terminated by mutual agreement the agency contract formerly existing. From July 1 export machinery inquiries and orders will be handled directly by the export department of Joseph T. Ryerson & Son Inc., at Jersey City, N. J. The iron and steel and machinery export business will be combined for efficiency of handling by the experienced organization now existing.

Steel Index Is Ready

The index to Volume 88 of STEEL, *for the first six months of 1931, now is ready for distribution. Copies will be sent to all subscribers requesting them.*

MIRRORS of MOTORDOM

DETROIT

FOR those four makers introducing new models, July output undoubtedly will be heavier than June. Production in the past week was constant at close to 61,000 units for the industry. Ford will make moderate reductions in the ensuing weeks and Chevrolet is uncertain over its July production.

In spite of probable easing as July progresses the month's total will compare favorably with June's. Contributing support increases to the belief of many that the summer's balance will show no steep recessions.

Chevrolet, continuing at 4000 units, five days, still leads production. Ford follows irregularly at over 5700 a day, three days, but steady in production of close to 17,600 model A's for the week.

Plymouth Takes Third

Ford's figure may be expected to be down an approximate 1000 cars a week by the middle of July. Though the earlier proposed July shutdown will in effect be confined to a lower productive schedule, report is persistent that Ford will now close in August for a time, and that within a two-month period from that date announcement may be expected of the oft-repeated new model.

There is basis for belief that Ford will incorporate a gasoline tank of larger capacity in the rear of model A before long.

Plymouth expects much of its new models and has lined up 15,000 units for July manufacture, a tentative 100 per cent gain from last month.

This Chrysler unit, for the week at least, has taken third production position with 3100 units assembled.

Chrysler itself is making some less than the 2000 units of last week with its Jefferson avenue plant closed from June 30 to July 5. Dodge output is highly irregular. DeSoto assemblies are at an unchanged rate this week.

Nash shows a slightly improved total this week to ten to 15 units more daily and at 415 a day, 5½ days, is abreast Oakland-Pontiac at 425 daily, five days. Willys-Overland produces around 2800 models this week.

Olds, assembling 250, four days; Studebaker, 300 models five days; Auburn-Cord with 200 units, five days; Hudson-Essex making 375 cars each of two days a week; Packard, 80 units, 4 days; and Reo's 100 models, five days, are all constant.

Cadillac-LaSalle averages 85 cars daily for four days. Of this total 40 are LaSalle's, 25 the Cadillac 8, 17 Cadillac 12 models, and the balance Cadillac 16's. Report has been heard that a new Cadillac-LaSalle line of fifteen chassis types will be constructed so that their bodies will be interchangeable, fitting any chassis regardless of length.

Hupp has advanced and shipments for the week from both Cleveland and Detroit were 430 cars. Graham, Marmon, Lincoln, Durant and DeVaux are all at last week's levels.

Diesel's Use Considered

Application of the diesel engine to the automobile is being discussed. Its performance in the recent Indianapolis 500-mile race and Packard's endurance records with a diesel-powered airplane have concentrated speculation on a popular application of the diesel motor, Ford not excepted.

But problems yet await solution. The every-day passenger car operates under anything but the constant load conditions under which the diesel has excelled in its airplane, racing and marine applications.

Too, diesel economy in cheap fuel is not in the final analysis so clearly established, the process of combustion is not such a simple one as the gasoline engine, and some point out that the auto owner is not likely to be won over easily to the odor of diesel fuel.

A European transportation company fitted out a fleet of buses with diesel power plants last fall, but at present gasoline engines have been reinstalled. The Public Service Coordinated Transport of New Jersey has been operating a bus powered by a diesel with electric transmission.

Probably arising from its aeronautical experiments, rumor has been that Packard was to drop a diesel into its passenger models, which would be an innovation in view of the diesel's problems.

Viscosity Gage to Come

One by one, gages controlling the automobile are gravitating to positions on the dashboard. To mention the most recent example, Packard, after incorporating its lubricating device from the driver's seat some few years ago, now employs in its new eights a dash-controlled cable shock absorber device with three stages to insure roadability and comfort.

This desire for one centralized control point is spreading. Just as the meter registering the volume of gasoline has in the past been removed from outlying points in the automobile to under the watchful eye of the driver, so now comes expectation in the near future of a viscosity gage.

The new dash board meter will reveal the quality of the lubricating oil and its amount, thus obviating the necessity of ascertaining in most cars the oil's condition.

The inventor of a popularly used shock absorber is rapidly perfecting the attachment and its announcement may be expected. Already some twenty different grades of oils have been tested and the gage has been found to record accurately.

Budd Wheel Co. is building a large extension to the craneway of its Detroit plant. . . . After over a year the voting trust in Reo stock has ended.

EDITORIAL

Statistics Poor Criterion For Price Policies

STATISTICS serve a useful purpose only when they are interpreted properly. Everyone who has had experience with the recorded facts of industry knows how easy it is to be mislead by mere figures. A knowledge of the background of the situation reflected by statistics always is helpful to an accurate interpretation of their meaning.

Therefore it is not surprising that experts who rely too much on abstract data and not enough on a knowledge of actual conditions occasionally arrive at conclusions that are not justified. Recently a business service, in its "analysis and forecast of general business conditions" dated May 30, published the following statement:

"The disturbing feature of the steel industry is the failure of the manufacturers to cut prices to a level at which consumers can afford to place orders. Steel prices are still relatively high, despite the downward trend since the peak in 1929. The index of finished steel prices (1926=100) is now 84.1. Steel prices are out of line, not only with the average price of raw materials, but also with the average price of finished products. The price index of raw materials in April was 68.3. The price index of finished products was 77.1.

"The strong financial position which the steel manufacturers attained during the recent years of prosperity has enabled them to attempt resistance to the general downward price trend. This is one of the factors making for the long duration of the current depression. If the steel industry had been less prosperous, necessity would have forced the manufacturers to make more quickly the inevitable readjustment which must occur before recovery.

"Steel manufacturers are still in a position to prolong the depression by refusing to cut prices to an attractive buying level. The prospect is, however, that the continuation of low earnings will soon convince them of the futility of resisting the general downward trend of prices. It is probable that finished steel prices, on the average, will have to be cut at least 20 per cent from the present level before the steel industry will be in a position to work at a satisfactory rate."

Easy To Prove Statistically Prices Are Too High or Too Low

It will be noted that this curious criticism of the price policy of the steel industry is based on the interpretation of price indices. Because the barometers of the United States bureau of labor statistics for April show the index of steel prices to be higher than the corresponding figures for raw materials and finished products, the critic of the steel industry concludes that steel prices are out of line.

Price indices never are conclusive because it is extremely difficult if not impossible to establish a base which is fair to all commodities. The bureau of labor established its records on the basis of 1926=100. Prices of commodities that were abnormally high that year were placed on a plane of equality with those which were below normal.

If one desires to prove statistically that steel prices are too low, he can do so easily by comparing the cost of living index compiled by the National Industrial Conference board with STEEL's composite of iron and steel prices. When the composite is made comparable to the cost of living index, by assuming 1914=100, the cost of living figure for April, 1931, is 140.6 and the price composite becomes 133.4—indicating statistically that iron and steel prices are lower than the cost of living.

Idea That Reducing Prices Spurs Purchasing Is Fallacious

On the basis of the bureau of labor's figures, steel prices are consistently lower than others in its group, except nonferrous prices. The figures for the bureau's group headed "Metals and Metal Products" are as follows:

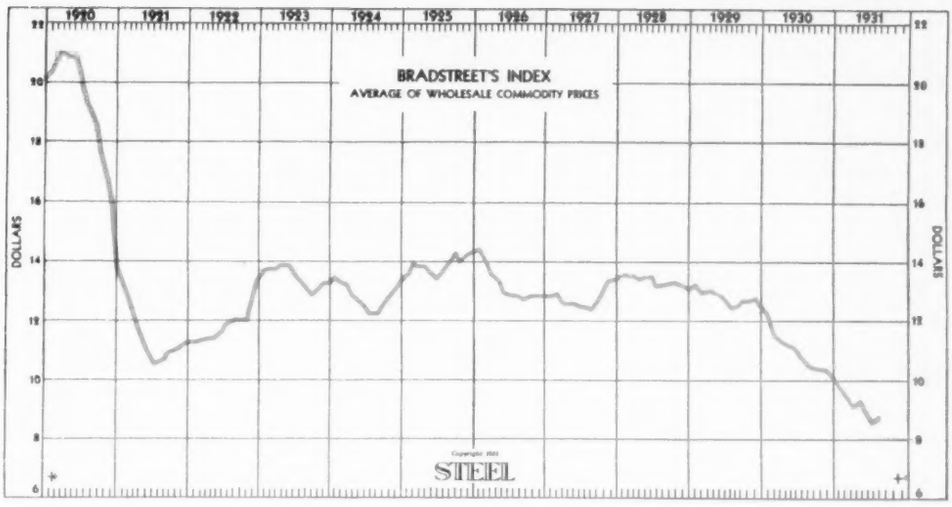
Year	Iron and steel	Nonferrous metals	Agricultural implements	Automobiles
1926	100.0	100.0	100.0	100.0
1927	95.9	91.9	99.3	101.8
1928	94.9	93.9	98.0	106.5
1929	97.3	105.7	97.9	110.9
1930	91.6	81.0	95.1	104.1
May 1931	87.2	60.6	94.7	98.6

Apparently the steel industry is not the worst offender, even on the basis of the critic's own figures.

Perhaps the greatest fallacy in the quoted statement is the assertion that steelmakers "are in a position to prolong the depression by refusing to cut prices to an attractive buying level." The fact is that prices have been cut time and time again without producing a favorable upturn in the volume of buying. To further cut prices at this time, as advised in the statement, would have no beneficial effect in stimulating purchasing, but on the other hand would actually prolong the depression.

What the steel industry needs and what steel consumers need is a strengthening of prices, which will encourage rather than retard buying. Confidence to go ahead with contemplated work is built on an upward price trend and not on continued price weakness.

THE BUSINESS TREND



1930	
July 1	$10.56
June 1	10.77
May 1	10.94
April 1	11.18
March 1	11.22
Feb. 1	11.51
Jan. 1	11.68

1931	
July 1	$8.77
June 1	8.64
May 1	8.91
April 1	9.23
March 1	9.17
Feb. 1	9.31
Jan. 1	9.51

Price Trend Holds Key To Business Situation

WHETHER the current strengthening of commodity prices is a flash in the pan or the beginning of an extended gradual upward swing is a question of great importance to business.

For several weeks prices of a large number of commodities have exhibited a stronger tone. Irving Fisher's index has advanced for the second consecutive week after declining steadily for 16 weeks. Bradstreet's monthly index on July 1 stood at $8.77, a rise of 13 cents from the June 1 figure. Seven of the 13 commodity groups covered by the index showed increased prices. They were: Fruits, hides and leather, textiles, metals, coal and coke, oils, and miscellaneous.

Prices of iron and steel are firmer. STEEL's composite of 14 steel and iron products was up 12 cents on July 1, the first advance since last March. STEEL's new composite on finished steel —comprising quotations of plates, shapes, bars, sheets, hot strip, nails, wire, tin plate and pipe —stood at $48.82 compared with $48.52 in the previous week. STEEL's new composite of prices of steelworks scrap also advanced by virtue of a stronger position in Pittsburgh.

Industrial Activity Slows Down For Midsummer Lull

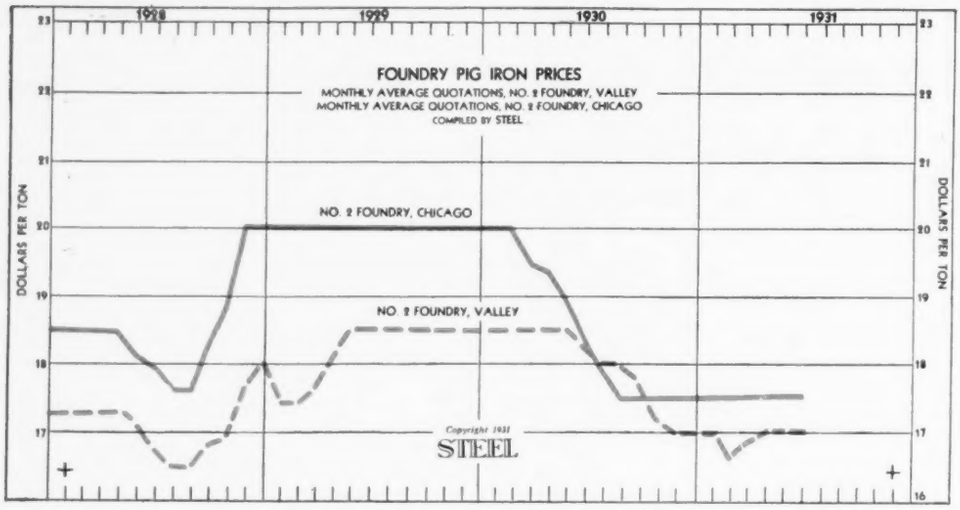
Operations in many industrial lines continue to slacken. Automobile output had dropped almost to 60,000 per week prior to the holiday. Steelworks activity last week dropped to below 35 per cent of capacity. Car orders in June are estimated at about 1800, thus closing the record for the first half with the smallest number of freight car purchases in years.

June production of pig iron is down sharply. In considering the drop of 13 stacks during the month, it should be remembered that the number of stacks in blast today is not comparable with records of previous years. The "Annual Statistical Report" of the American Iron and Steel institute, just off the press, shows that the average daily production per stack in 1930 was more than 100 tons in excess of the daily average five years ago. This shows the fallacy of comparing 1931 conditions with those of 1921— or of any distant year—by means of the number of active stacks. Daily average production is the best medium for comparisons.

Business Leaders Tranquil; Await Slow Recovery in Fall

In spite of the dullness of business at the moment, sentiment is good. A group of executives who are considered conservative in most of their observations, last week after scanning the outlook in their business very carefully, came to the conclusion that a marked pick-up before Sept. 1 is in sight. The majority of experienced executives look for a continuance of the dull period into August and part of September, with a slight improvement in the last quarter.

How much these expectations are based upon knowledge of the attitude of consumers and how much they reflect the optimism created by the debt moratorium is not known. If the present trend toward firming of prices continues for several weeks more, buyers will be forced to come into the market and the foundation for an improvement in business will have been laid.



Monthly Averages

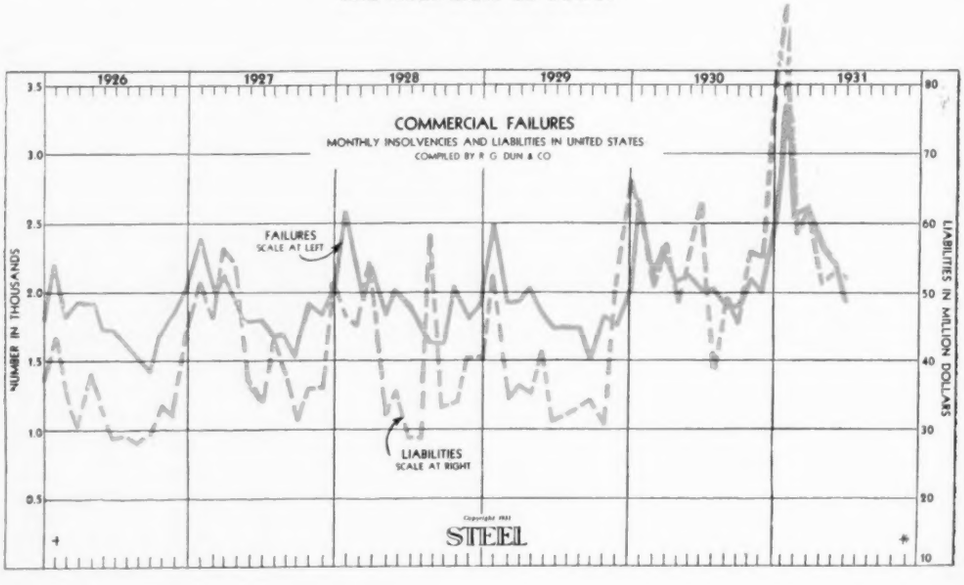
	No. 2 Foundry Chicago	Valley
June	$17.50	$17.00
May	17.50	17.00
April	17.50	17.00
March	17.50	16.90
Feb.	17.50	16.75
Jan.	17.50	17.00

Chicago and Valley Quotations for Foundry Pig Iron Maintain Same Spread

The spread between valley and Chicago quotations of No. 2 foundry pig iron was unchanged in June. For the eleventh month the Chicago price held at $17.50 and for the third month the valley figure was $17. The latter was maintained on routine sales of moderate proportions, while the Chicago quotation was sustained in the face of a demand which slackened considerably from that of May; Chicago shipments also were lighter. No. 2 foundry was quoted at $18.40 in the Chicago district a year ago, and the present price is the lowest for the month of June since 1915. A year ago the valley quotation made its first break from $18.50, which had prevailed for 13 months, and dipped sharply to a monthly average of $17.63.

Failures Fall Below a Year Ago, Are Fewest Since Last September

Business failures in June met with a considerable decline, particularly in numbers. There were 1993 defaults reported to R. G. Dun & Co., with liabilities of $51,655,648. May failures were 2248, involving liabilities of $53,371,212. In June, 1930, failures numbered 2026 and a correspondingly large sum, $63,130,762, was involved. In June for the first time since November, 1929, a reduction in defaults was brought about as compared with the same month of the preceding year. The June total was the lowest since September, 1930. Decline from January to June of this year was about 40 per cent, compared with 26.5 per cent in 1930. In six months of 1931, total failures were 15,107, up 1336 from the first half of 1930.

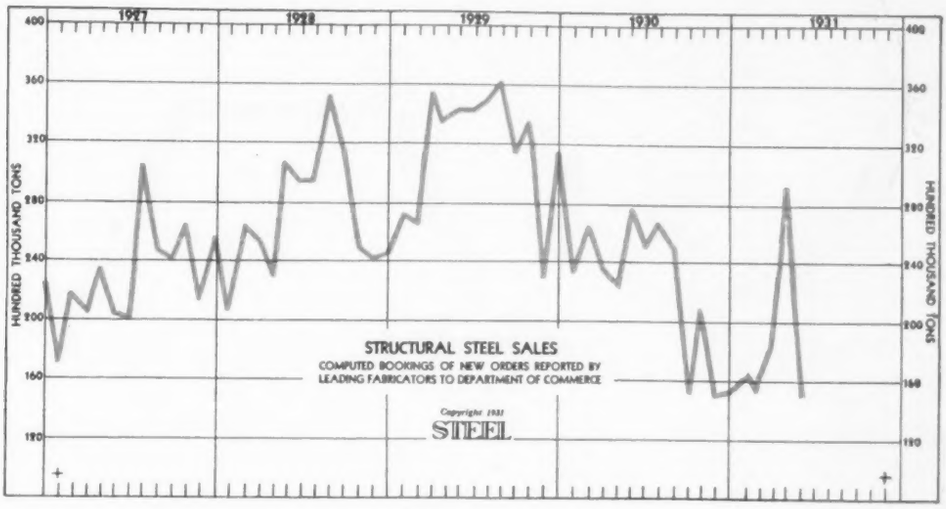


Liabilities

June, 1931	$51,655,648
May, 1931	53,371,212
June, 1930	63,130,762

Number

June, 1931	1,993
May, 1931	2,248
June, 1930	2,026



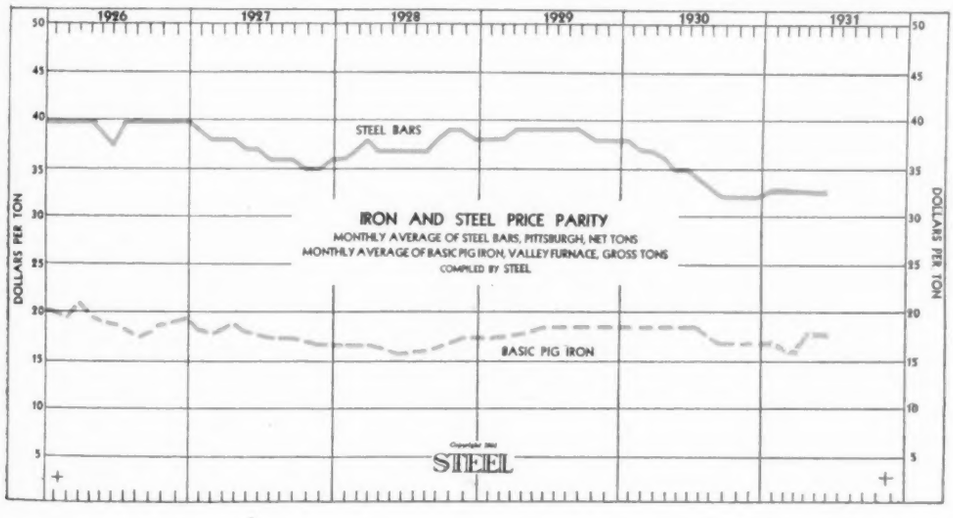
	Tons	
	1931	1930
May	152,800	279,200
April	292,800	222,800
March	184,400	236,800
February	158,400	267,600
January	162,400	238,800

Structural Steel Bookings Slide Downward To Lowest Point Since December

Following the steep climb in structural steel bookings made in April, May business subsided to a position below that of any other month of 1931 and came to rest exactly at the tonnage figure of December, 152,800 tons. New orders were equivalent to operations at 38.2 per cent of capacity, little more than half the rate of April, 73.2 per cent. In May a year ago there was an increase to 69.8 per cent and two years ago a slight gain to 83.5 per cent. May shipments underwent only a minor decline, from 158,400 to 148,000 tons, or 37 per cent of capacity. Shipments in five months of 1931 averaged 39.8 per cent, while orders averaged 47.5 per cent.

Steel Bars, Pittsburgh, End Second and Enter Third Quarter at $33

Steel bars, Pittsburgh, remained at $33 for June, for the sixth successive month. Basic pig iron quotations in the valley district also passed through the month without change and stood at $17 for the third time, pig iron continuing in a quiet market. Early indications of third quarter contracting tended to indicate that the steel bar quotation would carry through, although little progress was made in arousing buyers' interest. Finished steel took a mixed trend in June, with some advances in the new sheet classifications and in strip, and minor recession in other items, including several at Chicago. The Pittsburgh quotation for steel bars is the lowest for the month of June since 1922.



Steel Bars

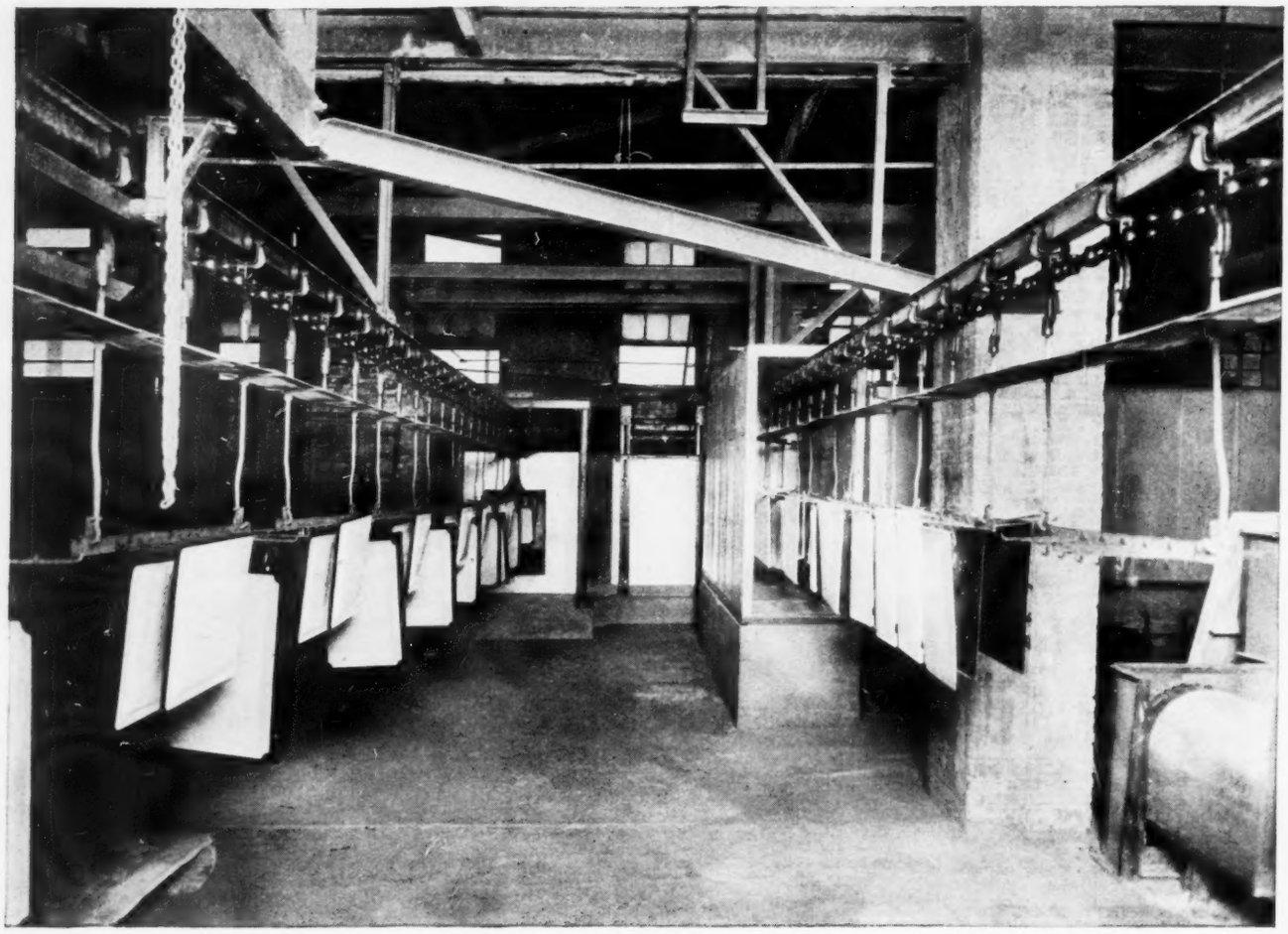
	1931	1930
June	$33.00	$35.00
May	33.00	35.00
April	33.00	36.00
March	33.00	37.00
Feb.	33.00	37.00
Jan.	33.00	38.00

Basic Pig Iron

	1931	1930
June	$17.00	$18.50
May	17.00	18.50
April	17.00	18.50
March	16.75	18.50
Feb.	16.75	18.50
Jan.	17.00	18.50

GAS

FOR VITREOUS ENAMELING



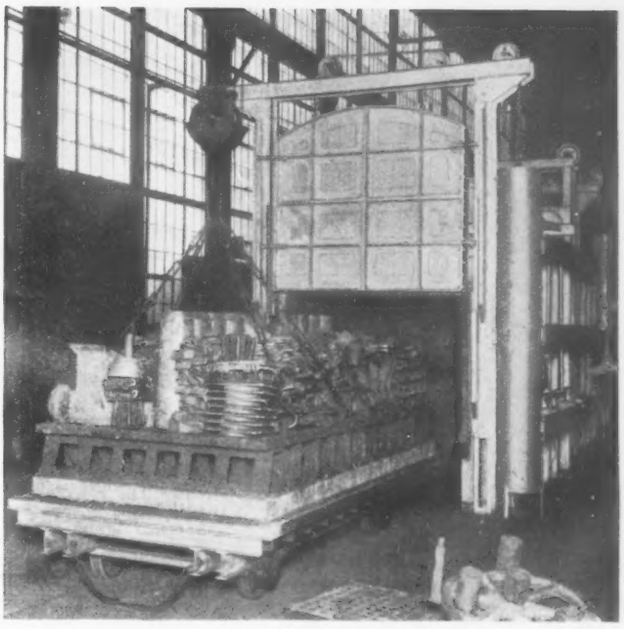
Practically every step in the vitreous enameling process is done better because of gas heat. Modern gas-fired furnaces speed up production and assure a better, cleaner job with fewer rejects for imperfections. The new book "Gas Heat in Industry" is full of data on the use of gas heat in every branch of industry.

AMERICAN *Gas* ASSOCIATION

420 Lexington Avenue, New York

GAS FOR HEAT WHEREVER HEAT IS NEEDED

Crankshafts Are Cast from Alloy Steel



Castings are loaded on trays and placed on the car-type furnace hearth ready for heat treatment

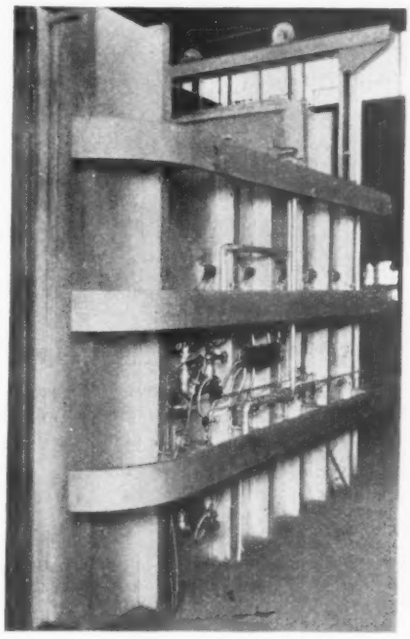
BY H. M. HEYN
Surface Combustion Corp., Toledo, O.

CRANKSHAFTS, connecting rods, etc., have been made exclusively by the hot forging process for many years. A distinct departure from this time honored method, however, has been made by at least one manufacturer of these parts and a satisfactory product has resulted.

The new method employed is that of casting a special analysis alloy steel. A complicated and most precise triple heat treatment imparts to the castings good physical properties and by using castings it has been possible to redesign the parts so as to increase strength at weak points and to lighten the structures as a whole. With the new designs, the castings were found to be well adapted to the uses to which they were put.

The Industrial Steel Casting Co., Toledo, O., has pioneered this field and is making cast crankshafts and connecting rods successfully for two of the world's largest manufacturers of pumps. This company also has enjoyed marked success in the manufacture of alloy cast-steel heads for diesel and semidiesel engines.

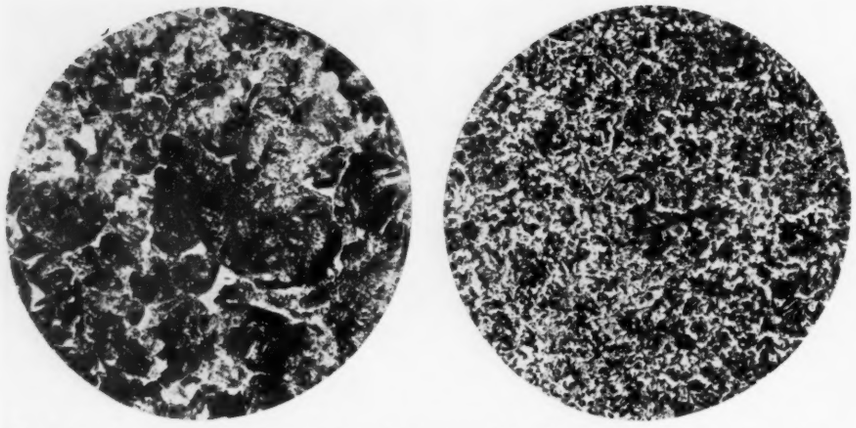
Chemical compositions of the nickel-manganese steel used are shown in Table I. The heat treatment of these castings is a special one developed in the company's research laboratory, as was the alloy steel. It is somewhat involved and is divided into three distinct operations with all temperature and heating periods held within extremely narrow limits. This particular alloy steel lends itself readily to different heat treatments. A few of the resultant physical properties are noted in Table II.



Burners of the furnace are controlled automatically

The quality of the castings made by the Industrial Steel Casting Co. is maintained by sand, chemical, physical and metallurgical laboratories, which control the various stages and processes of manufacture from raw material to the finished product. Research is carried on continually by the staffs of these laboratories.

Carefully kept records of the history of every casting enables clients of the company to trace each part to the specific heat from which it was produced. This record starts with the details of the heats, chemical and physical properties, and the photomicrographs of the grain structure. All of these tests are made before the



The structure of nickel-manganese steel as cast is shown at the left. The photomicrograph at the right shows it after heat treatment. It has good pearlitic dispersion with no traces of dendritic segregation

castings are shipped to the buyer.

The record accompanying each shipment of the higher quality castings is a feature of this foundry's operations and consists of a card bearing the analysis, heat number, and photomicrographs of the grain structure. So close is the laboratory and foundry control and so accurate is the duplication of each heat that it is possible to furnish these records and guarantee all castings to come within a small variable tolerance of the physical properties.

Three furnaces are used in heat treating the castings. Each furnace

Table I

Chemical Composition

Specimen Number	X-18	X-19
Carbon	0.344	0.340
Manganese	1.61	1.67
Silicon	0.69	0.61
Phosphorus	0.034	0.037
Sulphur	0.039	0.040
Nickel	0.73	0.70

is heated with a different fuel; one with gas, one with oil, and one with electricity. All of the furnaces are of the car-bottom type, with identical brick and steel construction, their only difference being in their capacities. The gas furnace holds a charge of 12 tons; the oil, 8 tons; and the electric, 5 tons.

The gas-fired furnace was designed and built by the Surface Combustion Co., Toledo, O. Outside dimensions are 18 feet long, 10 feet wide and 10 feet high, and it has a single counterweighted door in front. The tracks on which the car operates are laid into the furnace through this door, the car being pulled in and out by an overhead crane and cable.

The car top, which forms the hearth, is provided with a sand seal, so that the heat of the furnace cannot penetrate below to the trucks. At the same time, the compartment which contains the trucks is open in front for the free circulation of cold air from the outside, to eliminate heat from radiation.

Twelve two-stage, high-pressure, velocity-type gas burners are located along each side, making 24 in all. Half of these are placed well down close to the hearth and the others in the upper portion of the walls, this arrangement being used to assure uniformity in heat distribution.

Mixture Is Adjustable

The burners are manifolded to venturi-type inspirators, gas being furnished at a pressure of 10 pounds, which inspirates air for combustion. This setup permits any ratio of gas and air, so that the furnace atmosphere can be regulated by a single valve to suit the circumstances. Once set, this ratio is automatically maintained regardless of the volume of combustible mixture passing through the burner ports. A slightly reducing atmosphere is provided.

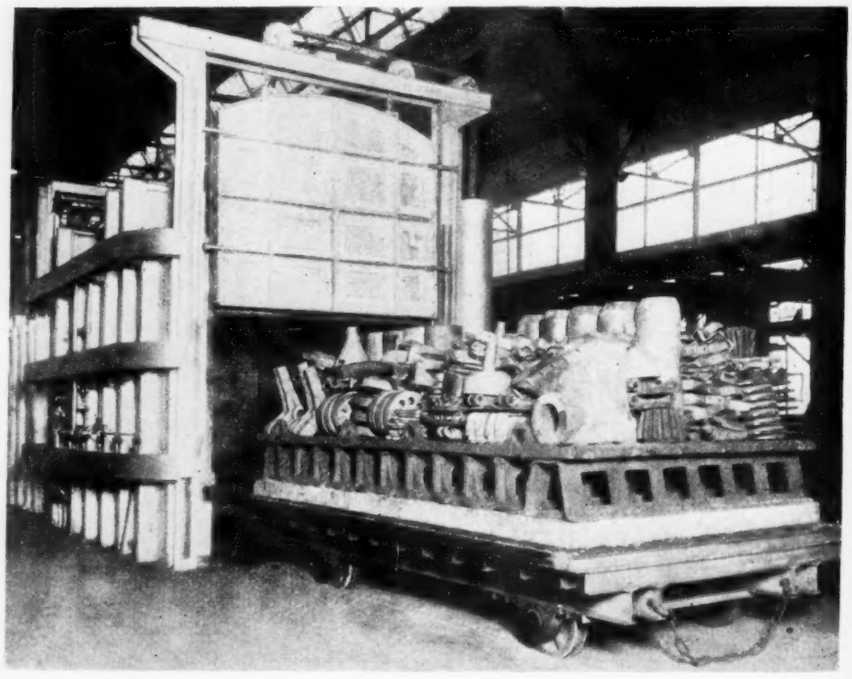
The furnace is equipped with two automatic temperature controls, connected with motor-operated valves in the gas supply lines and two thermocouples in the heating chamber, one extending into the charge from the roof of the furnace, the other into the center of the load from the side. The valves are of the on-and-off type, that is, when the temperature runs above the degree set on the control instrument, they automatically shut off the gas supply, and conversely, when the heat drops below this point, they open again.

Waste products of combustion are vented through a series of flues built into the walls of the furnace and which terminate at the two main flues. These flues have motor-operated dampers, which close automatically when the burners are shut off, so as to prevent infiltration of cold air to upset the heat cycle and atmosphere.

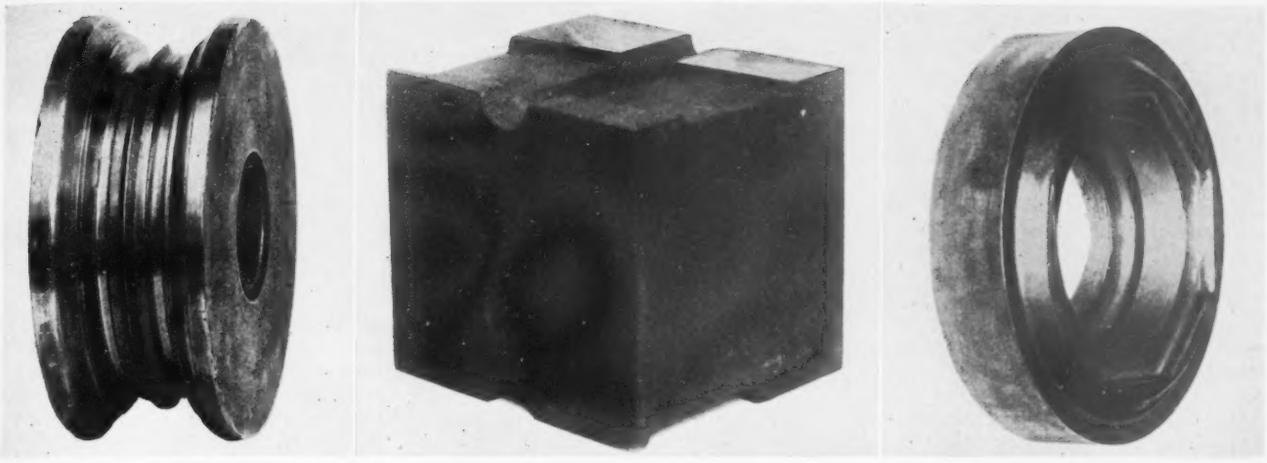
Table II

Physical Properties

Specimen Number	X-18	X-19
Yield Point	67,500	51,000
Ultimate Strength	101,750	90,000
Elongation in 2 inches	22.6	28.5
Reduction of Area	53.5	41.5
Brinell	192	187



When fully loaded the cars are pulled into the furnace by an overhead crane and cable



TYPICAL roller die (left) of 1.00 per cent carbon tool steel, used for cold forming strip steel; frequent design changes make cost of the steel an important factor. The hot gripper die (center) of low-carbon high-speed steel is used on key bolts made from 0.040 per cent carbon stock. At the right is a cold forming die of high-speed steel, for forming flanges of strip steel for steel barrels

Modern Tool Steel Analyses And Applications

BY W. H. WILLS
Ludlum Steel Co.

Part II

COMPARATIVELY little tool steel is required by sheet, tin and strip mills. Outside of roll turning, a small amount of straight carbon steel is used for tongs and shear blades. Strip mills use rotary slitting cutters made of high-speed or low-tungsten alloy steel.

A number of interesting applications are found in mills producing wire and wire products. Wire drawing dies are a large item and formerly chilled iron was used in most mills for dies on soft wire. Steel dies now are replacing the iron and the high-carbon high-chrome and Wortle types have shown good results on this work. For some work, as on odd shapes, the dies are made up from annealed stock and the only hardening the steel gets its from hot and cold peening around the holes. Then again the dies are hardened by oil quenching and drawn back just soft enough to permit the die to be reamed.

Carbon tool steel is used in a number of places about wire and wire fence mills. Reamers for drawing dies are made of high-carbon stock. In the general purpose carbon range it is used in the form of feed rollers and twisters on the fence machines, knives, rollers and dies on cold swedgers and puller jaws on drawing benches.

In the nail mills straight carbon steel (1.20 per cent) is used for nail heading dies and high-speed steel for the knives or nail pointing dies, these being made up usually from a double bevel or Keystone section. The hammer that upsets the nail head also is of high-speed steel.

Allied to wire mill work is cold finish work on bar stock. Here all stock handled in the form of coils may be classified as wire—usually ⅝-inch and under, and above this size as bars. Some high-carbon chrome steel is used for drawing bars, mostly for punch dies used on special sections, and sectional dies. The latter sometimes are made of high-speed steels. For drawing dies on rounds a steel that can be shrunk on re-treatment is preferred and for this purpose a high-carbon low-chrome or low-tungsten analysis is widely used.

TOOL steels find application in a wide range of industries such as wire mills, tube mills, forge shops, foundries, bolt manufacturers—all of which are enumerated briefly in the accompanying article, the second of two installments dealing with modern tool steels. The first article, published in the June 25 issue of STEEL, discussed analyses of six major types of tool steel. The author, W. H. Wills, is chief metallurgist, Ludlum Steel Co., Dunkirk, N. Y., and presented this paper recently at a meeting of the Worcester, Mass., chapter of the American Society for Steel Treating.

Tube Mill Requirements

In tube mills two classes of products are turned out—butt and lap weld and seamless pipe. One of the principal calls for tool steel is for the threading dies working on pipe as well as couplings. These are made up from flats often furnished in form of cold drawn bars of high-speed steel. Toughness as well as wearing quality are required and consequently a fairly low carbon high-speed steel works out best. A limited amount of carbon tool steel is used for certain taps. Reamers and recessing tools are made from regular high-speed steel.

For cutting butt and lap weld pipe to length and trimming ragged ends, rotary pipe cutters are used and these circular cutters are made from straight carbon or carbon-vanadium steel. These grades, and also occasionally a chrome-vanadium shock-resisting steel, are used for a number of minor applications about tube mills, such as shear blades, grips for threading machines, weld-

ing rolls, chisels, and also for jaws on the benches where seamless tubing is cold drawn.

Seamless tubing is trimmed and cut to length in most cases on cutoff machines using high-speed steel cutoff tools. A cobalt high-speed steel is being used by some mills with marked success on this work.

The cold drawing of seamless tubing is much like the same process for bars, but complicated by requiring a mandrel generally for sizing the interior and maintaining uniform wall thickness. Drawing dies usually are made from a steel that can be shrunk, as in the case of bars. Mandrels are made from straight carbon or a low-chrome steel.

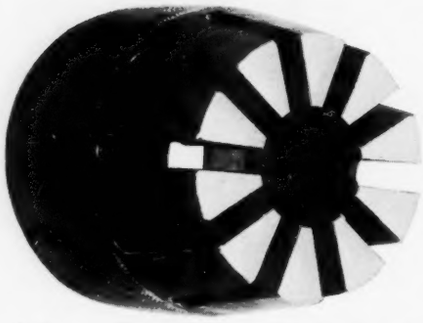
Some seamless tube mills feature tubing specialties that are upset or swaged to shape, these operations being done hot on a press or forging machine which uses dies of chrome or tungsten hot die steels.

In Electric Welded Pipe Mills

A new development in tube mills is the electric welding process. This process was used principally for light-walled tubing in fairly small sizes, but has been developed so that diameters of 12 inches or more with relatively heavy wall thickness are now handled. In connection with this process, trains of cold forming rolls are used for bending the skelp or strip steel and most of these rolls, particularly in the smaller sizes, are of manganese oil hardening steel.

Some light-walled tubing is sized by cold swaging and the hammers and dies on these machines call for 1 per cent carbon tool steel.

The final division of the steel industry includes fabricating plants working on structural material as well as plate construction and boiler work. It is in this line that numerous tools must be made from shock-resisting steels. One of the most common applications is punch work. Many types of punch steels are available; straight carbon, carbon-vanadium, chrome, chrome-vanadium, silico-manganese and silico-molybdenum types are ruling favorites.



Spline gage of 3-inch round manganese oil hardening steel

The development of hand pneumatic tools has created a wide field for shock-resisting steels. Of these the leaders are rivet sets and chisels. A widely used steel for rivet sets is the carbon-vanadium analysis. Others are straight carbon, chrome-vanadium and chrome-tungsten grades.

Under the classification of chisels may be included other tools used in pneumatic air guns, such as rivet busters, calking tools, beading tools, etc. Straight carbon steel is still one of the chief grades used for chisels. However, the low-carbon tungsten-chrome type is gaining in use for this work and makes excellent tools. Fabricating shops have a large call for reamers, which are usually made up outside and form an outlet for high-speed steel.

All boiler shops use flue expanders and the rollers and mandrels for these are tool steel products. The former originally were made from carbon steel, but chrome steel seems to be replacing it, giving better wearing qualities. A low-chrome tool steel works out well on mandrels.

Included in the next industrial division are foundries, both iron and steel, and forge shops, taking in the machine departments that work in connection with them. So far as foundries proper are concerned tool steel is of little importance, straight carbon steel for shock-resisting tools in a large measure meeting the needs. In some cases the tungsten-chrome or silico-manganese chisel steels are used for pneumatic cleaning tools.

Machine work on castings is varied and the machining quality will be affected by analysis, molding practice and heat treatment. The 18:4:1 type or general purpose high-speed steel is being used by a large percentage of shops for lathe, planer and boring tools with satisfactory results. For the more difficult jobs, particularly on cast iron and alloy steel, the cobalt high-speed steels have proved superior.

Machine work on forgings likewise is varied and in general the same kinds of tools are used as on castings, with the special high-speed steels being resorted to for the more difficult work. It might be added here regarding the special types of high-speed steel, that unless the heat treatment is handled carefully they are not likely to show much better performance than the ordinary 18:4:1 type.

Few Tool Steel Die Blocks

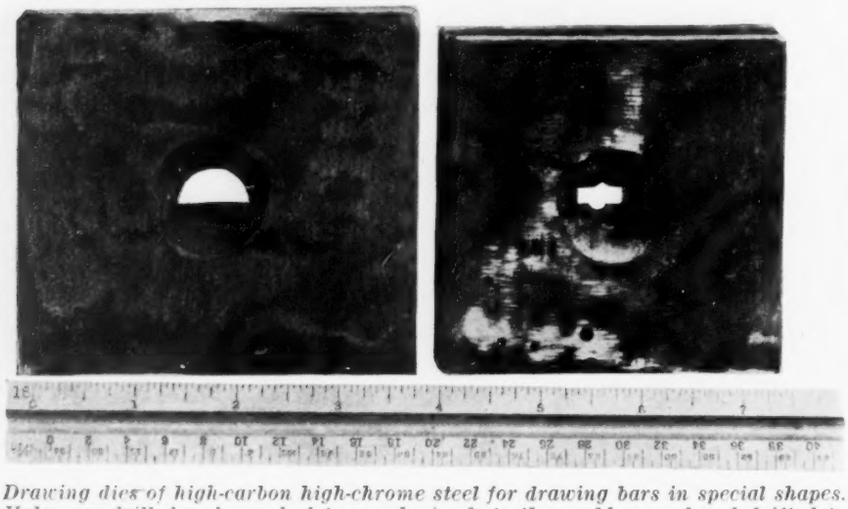
Turning our attention to drop forging, the first consideration is die blocks, the large majority of which today are of open-hearth carbon or alloy steel and not the product of tool steel mills. A small proportion, particularly smaller sizes, is of carbon tool steel running about 0.50 per cent carbon, and occasionally some alloy hot die types are in use.

These hot die steels, particularly the tungsten types, are important for dies in forging machines of the Ajax and National types, the development of which has been rapid in recent years. With these machines large runs usually are resorted to and the size of the dies kept relatively small so that the high cost of the steel is offset.

Trimmer dies for hot work are often of the chrome hot die or chrome-vanadium-carbon steel and sometimes of the tungsten type. On cold work straight carbon steel is common and the carbon-vanadium grade makes a good trimmer. For small dies high-speed and even high-carbon high-chrome steels have been used successfully.

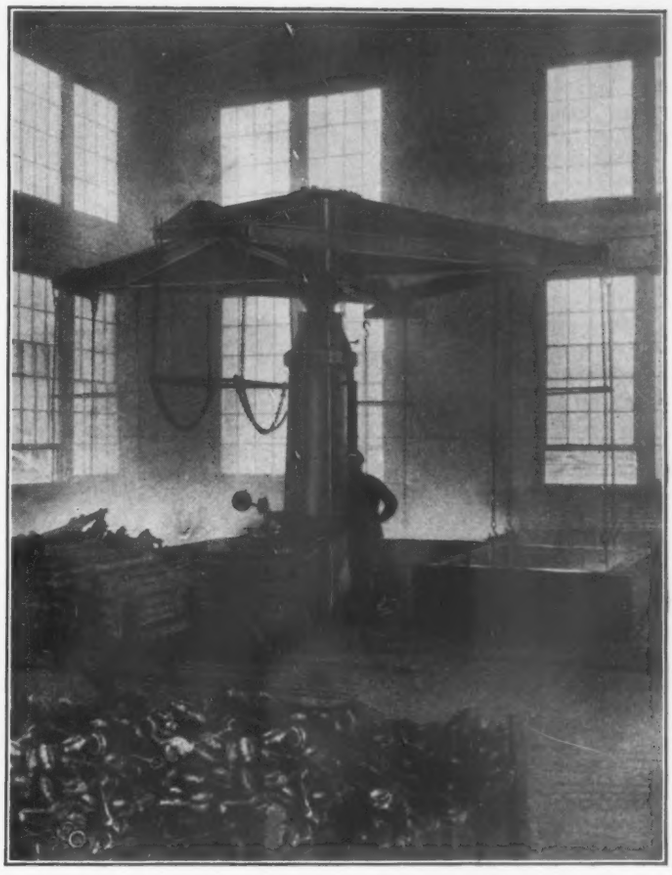
Screw, bolt, rivet and nut manufacturing has been marked by the broad development of cold heading and trimming machines. These have taken work away from the automatic screw machines and to some extent from the hot work machines, resulting in increased production and saving of material.

Bolts and cap screws are ordi-



Drawing dies of high-carbon high-chrome steel for drawing bars in special shapes. Holes are drilled and punched to rough size hot; then cold peened and drifted to final size

Pays for itself in Savings



MESTA PATENTED PICKLING MACHINE
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narily made by the cold process handling up to ⅝-inch stock. Some plants are working even up to ⅞-inch material. However, stock of over ⅝-inch generally will be worked hot, though plants equipped for hot work only will handle smaller sizes.

Considering first the hot work process, the chrome hot die steel is used more generally than the tungsten steel for gripper dies. For headers chrome hot die steel and straight carbon to a lesser extent are employed. Tungsten hot die steel is popular for hot nut tools and it, as well as low-carbon high-speed steel, is used for piercers.

On cold work some machines use open and others solid or closed dies. For cold header die work, a straight carbon tool steel is used widely, the common carbon range being 0.90-1.00 per cent. Some plants consider the carbon-vanadium type the best for this work. It appears that a steel hardening with a soft core is necessary to absorb the shock. Deep hardening steels usually fail by splitting or spalling of the dies. It is also essential that the steel be well worked so as to have a uniform structure throughout, particularly for solid or hammer dies where the center gets the wear.

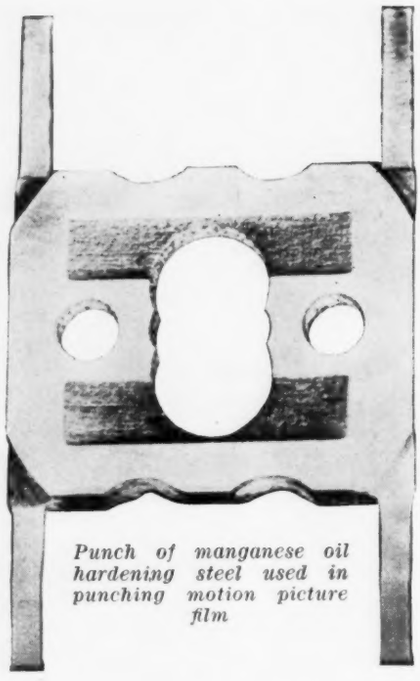
High-Speed Steel Favored

On bolt trimmers straight carbon steel is used by some for dies, but others are finding high-speed steel to give much longer runs, since less shock is involved and this can be withstood by the deep hardening steel using proper design and treatment. High-speed or the high-carbon-chrome grades also are used for bolt extrusion work, forming a tapered end on the bolts prior to thread rolling.

Threading is done by high-speed steel chasers or single-point tools and by rolling. The former are used for large sizes and more often for hot worked stock. The latter apply more to cold headed material. Thread rolling dies are made from carbon and oil hardening steels as well as high-speed steel.

Remarkable advances have been made in the metal stamping and deep drawing industry. Material worked ranges from thin gages such as 0.012-inch, up to as heavy as ⅜-inch or more. A great variety of finishes has been developed, from bright finished cold-rolled to hot-rolled and pickled stock, all of which have a bearing on die performance. Power presses have grown in size and power until today there are machines rated as high as 1200 tons on this type of work.

For punch press blanking dies carbon steel and manganese oil hardening steel generally are used on ordinary runs where the cost of the steel must be considered. On long runs where the parts produced run into the millions, high-speed steel and high-carbon-chrome steel are favored; the latter especially, due to its fine nondeforming quality, is much used for lamination die work on silicon sheets, some plants preferring it to high-speed steel for this work. In contrast to the relatively light lamination work, the high-carbon-chrome steels are giving remarkable results as punches and dies on heavy stock, such as ¼-inch. The adapting of this deep hardening and rather brittle steel to such heavy work has followed from proper adjustment of tool design and heat treatment. It applies not only to blanking but to some kinds of cold forming dies as well.



Punch of manganese oil hardening steel used in punching motion picture film

Punches Softer than Dies

Punches for blanking work generally are made from the same steel as the die, that is, when the punches are hardened. It is usual practice to draw them slightly softer than the dies; however, for some work the punch is used untreated or drawn soft enough to peen to size cold, in which case it is made nearly always from straight carbon steel.

Dies for operations following blanking include drawing or reducing dies and stoving or cold forming dies. Here again straight carbon and manganese oil hardening steels predominate, with high-speed, high-carbon high-chrome, and low tungsten types coming in for a share.

Drawing dies see severe service, particularly when the stock is given a heavy reduction which often runs as high as 1/16 on a side. The point of maximum wear on these dies is subject to some impact as well as wear. The question of wear resistance and maintaining a perfect surface is highly important on the final pass dies, and these dies often are reworked into dies for the intermediate stages of the drawing operation.

Large punches and dies on irregular shaped work frequently are built up in sections, which simplifies the problem of heat treatment and reduces chances of failure by breakage.

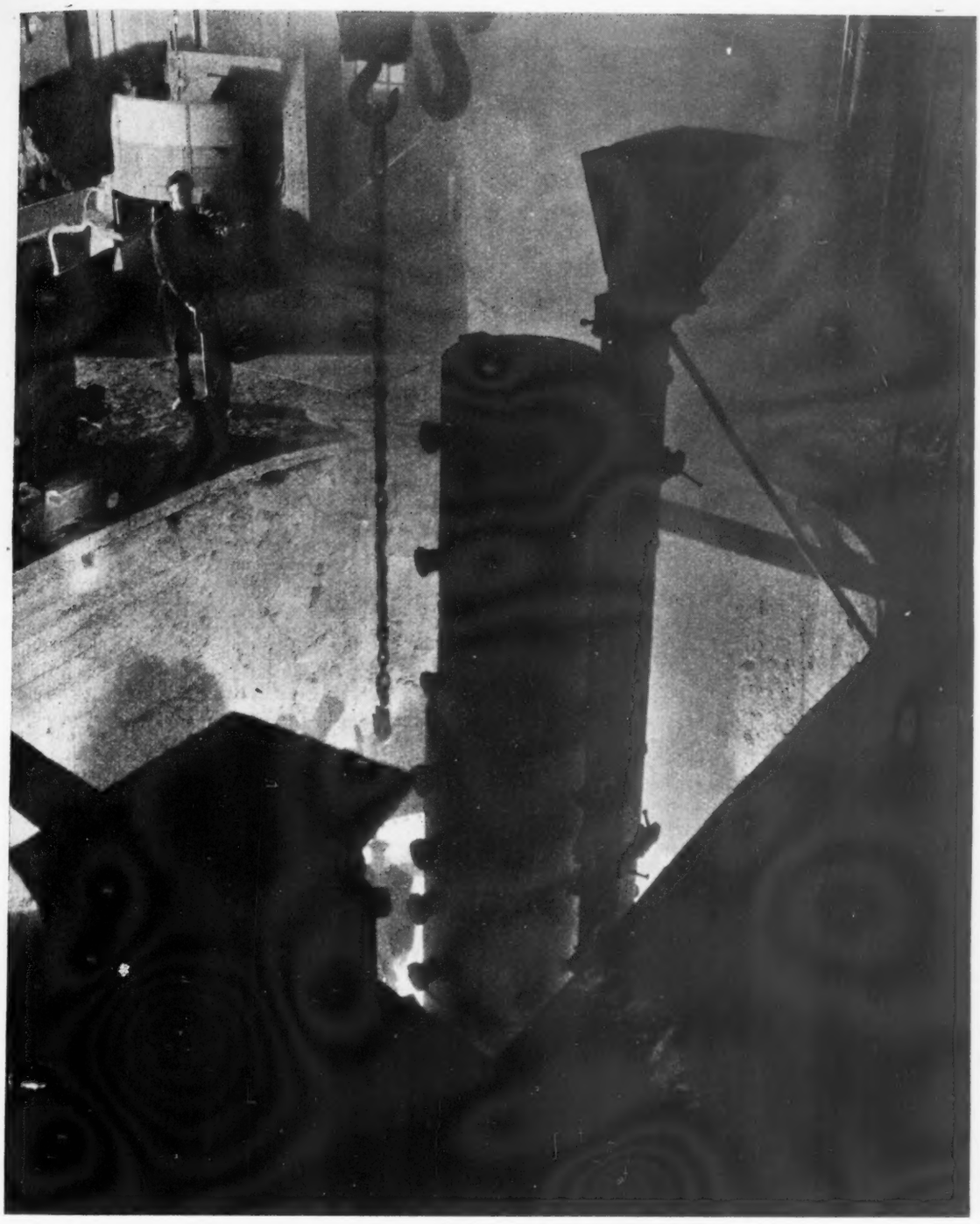
Metal furniture, and building trim and hardware manufacturing include much stamping and drawing work. Much of this work is cold formed by rolling, and tool steel for roller dies constitutes a considerable item. Carbon tool steel generally is used for cold forming rolls; however, some plants prefer the manganese oil hardening type, and for long runs the high-carbon high-chrome grade affords greater economy.

An Outstanding User

This subject would be incomplete without some reference to the automotive industry, where the part played by tool steel is really outstanding in comparison with the other lines and is reflected in the fact that the Detroit district is the largest market for tool steel in the country. Automobile plants are actually combinations or groups of smaller departments that embrace many of the lines of manufacture already discussed. Among these could be mentioned drop forging and forging machine work, screw and bolt manufacture, particularly cold heading work, also metal stamping and general punch press work.

Coining is a recent development made possible with the heavy presses now available; it is really a process of sizing forgings or stampings between compression dies under heavy pressure, thereby eliminating costly machining operations. Dies for this work must be deep hardening to withstand the heavy pressure and must be hard enough to resist wear. A carbon-chrome type, 1.00 per cent carbon and 1.50 per cent chromium, has been one of the most successful steels for this purpose. This type will show nearly 400,000 pounds per square inch compressive strength at 60 Rockwell C hardness.

The tool steel manufacturer often is confronted with difficulties or complaints which he must settle to the customer's satisfaction. These may be put in two divisions, namely, those for which he is responsible—such things as analysis, wrong grade, size, internal or surface defects—and those difficulties which may be attributed to the customers. Records covering several years show that of the latter division over 60 per cent may be traced to faulty heat treatment. Other minor troubles include wrong application or analysis for use intended, forging or machining strains, faulty design or mechan-



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The completion of the mould, following the careful alignment of chill upon chill and the bracing of runner box, releases, in the roll maker's innerself—a tingle of egoism . . . The artisan of the foundry assumes a natural feeling of confidence that his skill has been applied in just relationship to the requirements of the finished product . . . He knows that an inferior cast will not only penalize his craftsmanship, but the pronounced merits of a Birdsboro roll.

BIRDSBORO
STEEL FOUNDRY AND MACHINE COMPANY
DESIGNERS AND BUILDERS
BIRDSBORO, PENNSYLVANIA

ical trouble, and improper grinding treatment.

Heat treating trouble may be traced at times to rapid heating or overheating, also to furnace atmospheric conditions and improper drawing. The latter is met with frequently in case of high-speed steel tools. As an extreme case of this might be mentioned a rail finishing mill where the regular practice was to heat treat high-speed flat rail drills in a coke fire, quench in oil and air blast and put in service without any draw.

In general tool manufacturers are up to date on heat treating equipment which of course is to be expected considering the investment they make in tool steel year by year. It is the industrial users who are apt to overlook this matter and get by with inferior methods and of course obtain inferior results from their tool steel.

In conclusion, how should a user proceed to get the best results out of tool steel purchases? This will be answered by the following:

1. The proper selection of the steel—determined by the experience of user and producer—and the use of as few grades as is consistent with the number and type of applications.
2. Harmony between tool user, hardener and designer.
3. Adequate and modern heat treating equipment.
4. Competent supervision that will mean proper marking of tools, accurate records of performance and heat treatment, and careful checking up of failures so as to learn their cause and prevent recurrence.

Pennsylvania's 1500 Gondolas Use 2600 Tons of Malleable Side Stakes

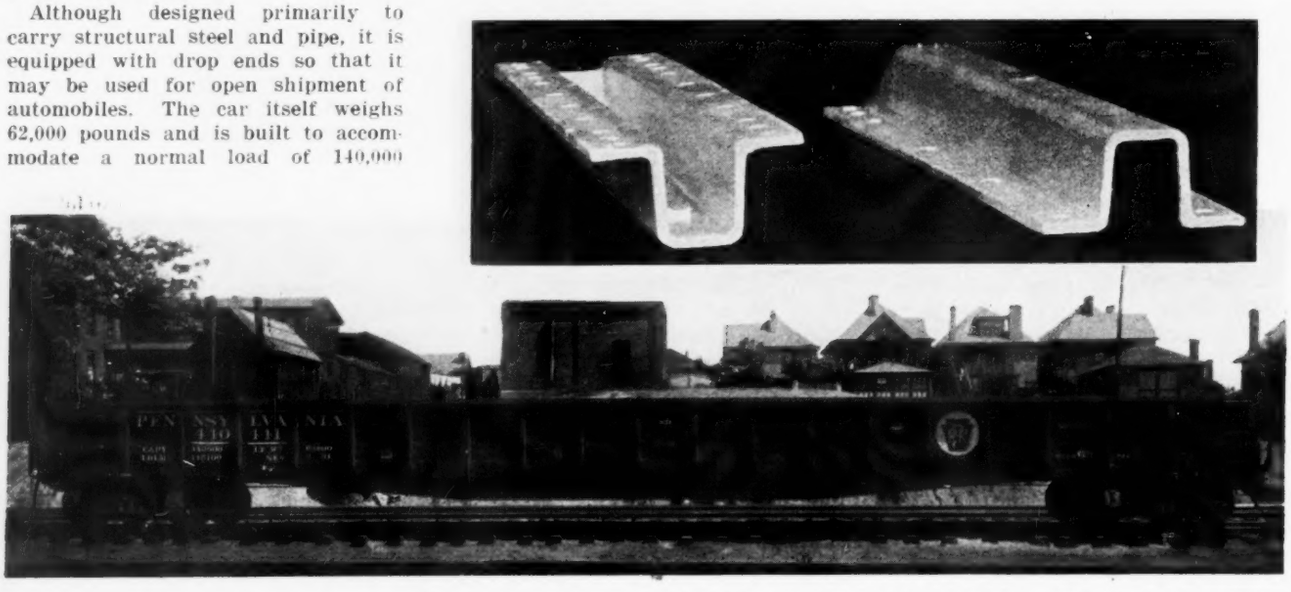
LAST winter the Pennsylvania railroad authorized the building of 1500 large gondola cars at a total expenditure of $5,000,000 and in so doing provided direct employment for 600 of its employes in its three shops at Altoona, Enola and Pitcairn. Construction of these cars required 41,500 gross tons of steel and steel products, representing considerable indirect employment.

These cars, known as the G-26 gondola, are of special interest because of their type and large size. One of the cars is shown in the accompanying illustration. It is 70 feet 3 inches long overall with an inside length of 67 feet 9 inches and inside width of 7 feet 7½ inches.

Although designed primarily to carry structural steel and pipe, it is equipped with drop ends so that it may be used for open shipment of automobiles. The car itself weighs 62,000 pounds and is built to accommodate a normal load of 140,000 pounds with a limit of 148,000 pounds.

One of the features of construction is the use of high-strength malleable castings for side stakes. To obtain a corrosion-resistant material for this purpose which would be uniformly strong and rigid and without excessive weight, the builder specified that the malleable iron should have a minimum yield point of 35,000 pounds per square inch and an elongation of 18 per cent. The engineers specified only the properties which would insure maximum quality of the material to be used.

A total of 2600 tons of malleable iron comprising 57,000 pieces was ordered from four foundries. A record compiled from all the heats cast shows an average yield point of 37,927 pounds and an elongation of 23.1 per cent. The average ultimate tensile strength was 57,600 pounds. Some of the stakes were punched while in others the holes were cored.



Gondolas built by the Pennsylvania railroad last winter are notable for their large size and type. The inset above shows two of the high-strength malleable iron side stakes used in their construction

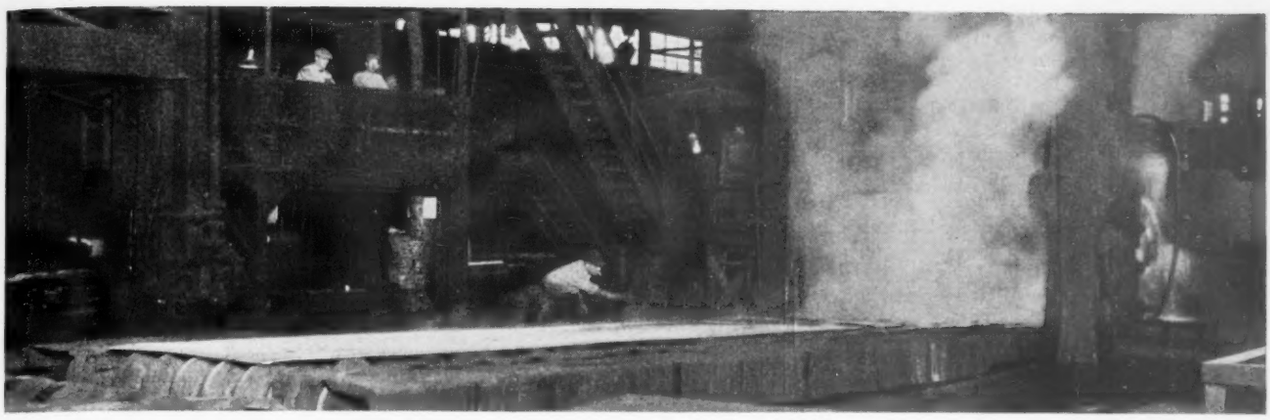
Steel Framework in Home Is Being Arc Welded

Construction has been started in Cleveland on a $25,000 residence featuring complete arc welded steel construction. This home, a 2-story structure of French archtecture, was designed by George H. Burrows, a Cleveland architect, and will require approximately ten tons of steel for the framework.

Principal shapes employed are 3-inch light-weight standard Carnegie beams. With one welder and three structural iron workers, four tons of steel was erected the first day. All steel was cut to size before delivery to the job and it was expected that the framework would be completely erected in two and one half working days.

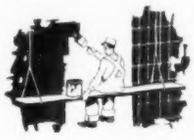
All fabrication and erection welding is being done on the site by the McKay Building Co., Cleveland, the general contractor, using equipment and electrodes manufactured by the Lincoln Electric Co. of the same city.

According to estimates of Mr. Burrows, the residence will cost approximately 40 cents per cubic foot and the use of welded construction will cost only $72 more than the usual type of wood structure. Because of its steel frame, the house will not sag or shrink and will be fire resisting. Although steel construction for homes is not new, it has usually been customary to bolt or rivet the framework members together.



WHERE ROLL AND INGOT MEET

SEVEN years ago a plate mill was overhauled. Among other difficulties, the cast bronze bearings in the lifting tables had to be replaced at the end of every week. In overhauling, the bronze bearings were replaced with tool-steel spindles and bushings. The latter continue in service and appear to be good indefinitely. This same company now is investigating the possibilities of nitrided steel and case-hardened steel for wear-resisting purposes.



PURCHASE of paint constitutes an important item in the maintenance expenses of all steel plants. An important interest is buying paint to three specifications, one for covering new galvanized sheet buildings, another for coating structural steel and a third for coating hot stacks, steam lines, etc. It purchases this paint under contract with a guarantee covering the amount of surface a gallon of paint will cover effectively and the number of years the paint will endure.

A steel company recently clamped down on uncontrolled visits from salesmen. There had been cases where it was felt that the influence of salesmen had become unduly great; even instances where salesmen brought refreshments into the plant. Salesmen now are admitted with passes signed by the purchasing agent, and in a good many cases they are not admitted to the plant, the plant men seeing them when they come in after the noon lunch hour.

Many open-hearth superintendents continue to feel that much defective steel is charged against them unjustly; that some defects charged against the open-hearth department actually should be charged against the mill. Says one open-hearth superintendent, "While I feel like fighting for my rights, I cannot do so to the extent of becoming a nuisance in the organization."

Defects found in the mill which are or may be charged against the open-hearth department include scabby and pitted surfaces, seams, bad tops, bad edges, bad bottoms, clay and sand inclusions, etc. Some open-hearth superintendents contend that some of these defects arise in the mill, particularly in heating the steel. The steel may be overheated, causing melting off of the skin. It may be underheated, resulting in a snake. A piece may be nicked off the top or the bottom. A piece of brick may drop out of the roof of the soaking pit and be pressed into the skin of the ingot. On the other hand, open-hearth superintendents feel the defects ordinarily charged against the mill departments are such as can occur only in the mill. They include wides and shorts, burns, scales, cinders, cobbles, buckles, off-gages, etc. Open-hearth superintendents would welcome a Moses who would lead them out of the bad steel wilderness and give them a 50-50 deal in connection with defective steel charges.

SEVERAL years ago an eastern steel plant was having crane trouble due to excessive wear of the crane track wheels. It supplanted the cast iron wheels that had been used up to that time with new wheels having hardened tool-steel rims. These continue in service and still appear to be almost as good as new.

Methods for obtaining perfect surfaces on certain steel products are receiving considerable attention, particularly where the surfaces are to be plated or otherwise highly finished. Development of methods to obtain perfect surfaces brings its own rewards. In one case, for instance, a concern is enjoying the lion's share of the business from a certain large source solely because it is able to put on its steel the best surface that is obtainable.

INTEREST is being revived in the use of silicon and manganese in combination. This is not only for the purpose of producing better steel, but to lower chipping costs on forging grades of carbon or alloy steel.

At the plant of an eastern steelmaker a 120-inch plate mill shear has been built with welded steel plate completely. The company now is installing a straightener built entirely of welded plates.

Some authorities consider it highly advisable that men to be trained as welders shall have had some preliminary experience as ordinary wood carpenters, because the knowledge of joints gained in carpentry is useful in making welds.

Capping ingots in molds is done at some plants with caps cut out of scrap plates with an acetylene torch. A handle also burned out of scrap plate, is welded to the cap. The covers cost about one-third as much as cast plates and are unbreakable.

For coating ingot molds, an old method still is employed at certain plants making high-grade steel. A tray of resin is lowered into the mold. The resin is lighted and a cover

placed on the mold. The resulting layer of smudge is found satisfactory for keeping the steel from seizing the interior of the mold.

A market analysis of the Steel corporation recently completed by a New York firm is tinged with interest. It reveals that years returning deficits after dividends have more than been made up the following year. In 1914, a deficit of $17,000,000 was shown after dividends but in 1915 nearly $44,000,000 was tucked away into surplus after dividends. Then, too, combined deficits were chalked up against the years 1921 and 1922, but in the following year an entry of $53,000,000 was made to the surplus column after dividends.

The report also shows that after every year of low production and earnings, the following year's third and fourth quarter earnings were better than the first half. In 1905 the last six months contributed 55 per cent of total earnings; 1909, 60 per cent; 1912, 60 per cent; 1915, 68 per cent; 1922, 53 per cent; 1925, 51 per cent; and 1928, 54 per cent. On this basis earnings for the last half of the current year certainly will bear scrutinizing.

A safety guard for a rivet cutter made from pieces of old air hose recently brought commendation from a superintendent in the Pittsburgh district. The cutting chisel is driven through one end of an air hose about 2½ feet long which serves as a handle. Another piece of the same length is held against the bolt or rivet to be severed to prevent the sheared section striking the workmen.

At a plant in the Chicago district a bar storage rack is built with a series of rollers in the lower part of the frame to facilitate moving the bars in and out. The number of crushed feet has been reduced.

Limit chains on pipe lines equipped with sleeve-type expansion joints are looked upon as an important safety feature by a midwest concern. Strap iron collars are bolted around the pipe, one on each side of the flange, and serve as anchorages for two strands of chain 180 degrees apart. Should movement of the line become excessive, separation of the joint is prevented by the chain reinforcement.

Welded Steel Panels Form Framework And Partitions of New Dwelling

ONE of the first completely welded brick and steel dwellings constructed by electric arc welding was recently built at Larchmont Gardens, Mamaroneck, New York. It is a six-room, two-story building, 26 x 32 feet, with full basement and a two-car basement garage, and is built on a foundation of stone and concrete.

The entire framework and all interior partitions are made up of standard size panel frames previously fabricated in the welding shop from 1½-inch angles. They are made up of two duplicate frames tied together with spacers to provide the regular wall thickness of four inches throughout the house. Two sizes were used, the wall sections in which there are no windows being 2 x 9 feet; the window sections are 6 x 9 feet, providing for large-size windows.

In erecting the walls and partitions, a plate sill 6 inches wide by ¼-inch thick was laid directly on the foundation to take care of any roughness on the concrete, and fastened down by means of bolts grouted in the concrete. The fabricated panels were then welded to the sill as shown in the illustration. Adjoining panels were welded together at their edges to make a solid structure throughout. The second floor was erected in exactly the same manner and was welded to the top of the first floor sections. Electric current for all field welding was generated by a General Electric gasoline engine-driven arc welding set.

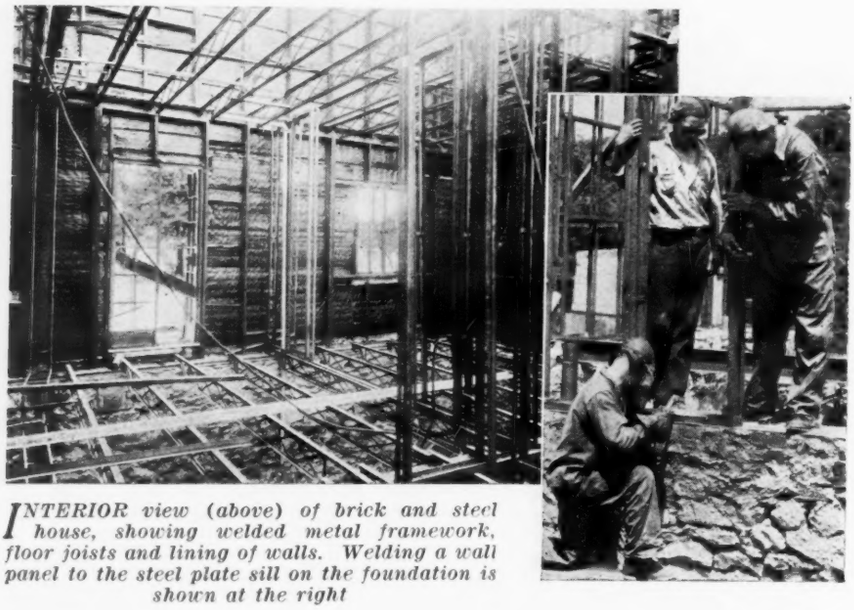
Joists Are Trusses

An 8-inch I-beam was used for the main floor bearing beam. All floor joists, on both the first and second floors, are of steel truss construction, 8 inches deep, and welded to the frame of the house at each end and to the bearing beam or partitions in the middle. This type of floor beam was used because it provides rigidity without excess material. A 2-inch wire mesh, spot welded at each juncture and interwoven into fire-resisting waterproof paper, is laid directly over the floor joists and covered with a 2-inch course of concrete to make up the floor.

The roof supports or rafters are 4-inch channels with 2-foot spacing and are welded directly into the outside wall framework of the building. The gable sections were fabricated in the shop, trucked to the building site, hoisted into place and welded to the framework proper.

The outside of the house is finished off with a brick veneer inside which is placed a layer of wire mesh, to the top of the second floor level. The gables and dormer are finished with stucco. All windows are of steel casement type welded into the framework of the building. All doors are of steel construction, set in steel bucks and frames welded into place.

The interior finish of the house consists of wire mesh over the framework and hard plaster. In fastening the mesh in place, attachment bars consisting of a small rolled steel channel with wire fasteners spot welded to it were used. The channels are securely tack welded to the steel framework and the mesh tied in place by means of the wires.



INTERIOR view (above) of brick and steel house, showing welded metal framework, floor joists and lining of walls. Welding a wall panel to the steel plate sill on the foundation is shown at the right

Steel Constructors To Hold Annual Meeting Oct. 27

The American Institute of Steel Construction will conduct its ninth annual convention at the Greenbrier hotel, White Sulphur Springs, W. Va., Oct. 27-31. At this meeting special emphasis will be directed upon internal problems of the structural steel industry.

Slides and eyelets are automatically manufactured and attached to calendars in this machine. Calendars are fed into it much as paper is fed into a job press

Large Uses of Steel In Small Ways

195th Article ◆ Calendar Slides

ONE of the least conspicuous uses of steel in large amounts is in the form of slides for calendars and small posters. Millions of persons look at wall calendars everday, but they seldom note the tinted strip of metal fastened to the top edge of the paper by means of which the calendar is spread out and suspended. Practically all slides, as they are known in the trade, are made of steel, through brass and paper also are used. A considerable portion of the eyelets by which they are fastened to the wall are made of brass.

Slide manufacturers obtain their material in the form of No. 38 and 35-gage sheets, 20 x 28 inches or 20 x 36 inches, from the mills. The sheets are given a thin coat of green, brown, gray or black enamel at the mills, or at plants which obtain the sheets from the mills and coat it for the slide manufacturers.

Some of these manufacturers not only make the slides but make a business of attaching them to calendars and posters for the manufacturers of the latter products. They also sell slides to the so-called calendar "jobbers." These jobbers buy art calendars from printing establishments, attach the slides, and then print on the calendars the name of the company to which they sell the finished product. A few of the largest calendar publishing houses purchase the sheets direct from the mills, make their own slides, for their own calendars.

The sheets are standard sizes, and as many are purchased from the mills for uses other than slides it is difficult to obtain precise figures on the amount of steel consumed in the making of slides. However, one of the five largest slide manufacturers estimates the total at 1500 to 2000 tons, based on his own consumption and his ideas of what his competitors are doing.

Assembly Is Simple

Some of these maunfacturers have devised special machinery, details regarding the operation of which they guard as trade secrets. The operation, however, is very simple, and consists in feeding the sheet into the machine which shears off strips, ½-inch wide for the small calendars, and ¾-inch wide for the larger sizes. At the same time the strip is folded into a V shape, one arm of the V being only half as long as the other. These simple strips of steel are the slides, and they are made by the millions, as not only calendars and posters, but maps and many other printed sheets are edged with the metal. The larger sizes of calendars, and the like, have these strips at both top and bottom.

The width of the sheets as fed into the machines determines the length of the slides. Manufacturers and users try to hold to standard lengths, and trim the slides later as required. The eyelets, made separately, are attached to the slides by punching through the two pieces of metal when they are in contact. One or two sharp projections thus obtained are immediately clinched, securing the eyelet firmly to the slide.

Machines Handle Work

The calendar jobbers have simple hand, or power operated machines into which they feed the slides and the calendars, one of each at a time. The edge of the calendar is inserted in the V. The operator pulls a lever and the machine first squeezes the V tightly against the paper, and then folds the longer arm of the V backward and over. The paper thus is secured tightly in a double fold of steel.

Hundreds of jobbers are in the calendar business. They now are making calendars for 1932; speed apparently is not an object with some of them. Though the folding machines they use are the same as those used by the larger companies, fast, automatic production machines are being developed. Calendars, slides and eyelets are fed into these machines in quantities; they attach the eyelets to the slides and the slides to the calendar at practically one operation.

Seal on Galvanized Sheets Will Certify Quality

A "Seal of Quality," to be stenciled on galvanized sheets carrying specified weights of zinc coating, has been adopted by the American Zinc Institute Inc. This seal will be used by manufacturers of galvanized sheets under a license arrangement, to indicate sheets of certified quality. Preliminary announcement of this departure appeared on Page 26 of the July 2 issue of STEEL.

For use in rural communities, particularly for roofing and siding of farm buildings, such sheets will be produced in Nos. 28 and 26 gage, with a coating of 1.75 ounces of zinc per square foot. This coating is fully 40 to 100 per cent heavier than coatings on most of the commercial sheets produced today, and will preserve the sheets from rust for a longer period than the thinner coatings. For use in localities where atmospheric conditions are more severe, sheets of 26 gage and heavier, carrying 2.00 to 2.50 ounces of zinc per square foot, will be produced.

These heavily coated sheets will be sold mainly in the corrugated and V-crimp types, for use in roofing, siding and similar applications. Such sheets should not be subjected to severe bending or extreme forming operations unless special measures are taken to prevent damage to the coating.

Scanning the Technology of Steel

A Digest of Important Developments in Scientific Research, Engineering Progress and Operating Procedure Pertaining to the Production, Processing, Application and Performance of Steel

Ghost Lines

Ghosts or ghost lines in large steel forgings, by J. Fletcher Harper and Harold J. Stein, first portion of a paper to be presented at the September, 1931, convention of the American Society for Steel Treating in Boston; Metal Progress, July, 1931, p. 45, 5 pp., 5 illusts.

A ghost or ghost line in a forging is a nonhomogeneous streak of metal, in comparison to the main mass; and may or may not contain cracks and nonmetallic impurities. Due to its difference in composition from the surrounding metal, more light is reflected from a ghost in a machined surface than from the major portion of that surface.

Slow solidification ghosts, ingot corner ghosts and crystallization structure ghosts are three types which have been identified. The first two types are discussed in detail, photomicrographs and macrographs being presented to show the characteristic appearance of these structures. Opinions are cited as the cause of ghost lines. The third type, crystallization structure ghost lines, will be discussed in a later article.

—STEEL, 7-9-31

Soldering Stainless Steel

Suitable solders, fluxes and methods for making joints in stainless alloys from a background of practical experience, discussed by A. Eyles, in American Machinery, June 25, p. 978, 1 p.

It is essential to use properly tinned soldering coppers of suitable sizes for applying the necessary heat, or a suitable torch flame. The time contact between the joint members and the molten solder, the soldering temperature, the thickness of the joints, the composition of the flux, and the presence of elevated temperatures are important in the strength of the soldered joint. The best soft solders for joining stainless steels are made from pure tin and lead in the proportion of 66 per cent tin and 34 per cent lead. This solder flows freely and presents a bright lustrous surface when the joint is buffed. The steel should be cleaned mechanically by grinding, filing or scraping and chemically by applying a suitable soldering flux. Zinc chloride remains liquid at the temperature of molten solder, thus being in condition to act readily on oxides. After the surfaces are tinned, they are soldered in the normal way, washed in a soda solution and then rinsed in clean water.

—STEEL, 7-9-31

Tungsten Carbide Tools

Procedures to be followed in the successful application of this cutting alloy, discussed by F. W. Curtis, in Machinery, July 1931, p. 867, 2½ pp., 4 illusts. First of two articles.

From experience and research work, it has been found that the correct use of this cutting medium depends upon the proper condiseration of ten important rules. These are stated as follows: Apply only suitable operations, use only machines worthy of application, provide rigidly constructed fixtures, increase the size of the tool, support the tool solidly, use correct feeds and speeds, do not stop tools in cut, grind tools accurately and correctly, resharpen tools regularly and keep extra tools on hand.

—STEEL, 7-9-31

Tests of Welds

Investigation of hand welding relatively thin steel plates used in the fabrication of storage tanks for oil and water systems, discussed by W. M. Wilson, in circular No. 21, Engineering Experiment Station, University of Illinois, Urbana, Ill.

The objects were to determine the physical properties of a weld rod after it has been deposited in a weld, the relative merits of various types of welds for thin plates, and the relative merits of various types of weld rods. The investigation is limited to electric-arc welds and to static tests of welds. Data obtained from tests indicated that a rod designed to produce a reducing atmosphere over the molten metal may be, but is not necessarily, superior to an uncoated rod. It would appear that before the superiority of a particular make of rod can be accepted, tests should be made upon welds from that rod. The strength of the all-weld specimens made of uncoated rods, as well as these made of rods designed to produce a reducing atmosphere, was greater when the beads were laid longitudinally with the specimens than when they were laid transversely to the specimens. Specimens containing lap joints welded with a rod not designed to produce a reducing atmosphere all broke outside the weld, the average strength being slightly greater than the strength of the control specimens cut from the plates welded together.

—STEEL, 7-9-31

Corrosion of Equipment

Factors which contribute to the corrosion of power plant equipment and methods of elimination or prevention, discussed by H. F. Johnstone, in bulletin No. 228, Engineering Experiment Station, University of Illinois, Urbana, Ill.

The bulletin describes the conditions which are present in flue gases that cause corrosion and some of the steps that may be taken toward their elimination. The reactions that take place in a boiler furnace are discussed and their effects on corrosion and slag formation are brought out. A description of the experiemntal work carried on in the laboratory and its results also are included. These substantiate the ideas of the cause of corrosion suggested by the plant data. The results of tests on various corrosion-resisting alloys and protective coatings under the conditions existing in the flue gases are reported. A description also is given of new methods for determining the dew point and sulphur dioxide and trioxide concentrations in flue gases.

—STEEL, 7-9-31

Cutting Oils

Safe use of cutting oils and emulsions, discussed in safe practices pamphlet, No. 44, published by the National Safety Council Inc., Chicago, 8 pp., 10 illusts.

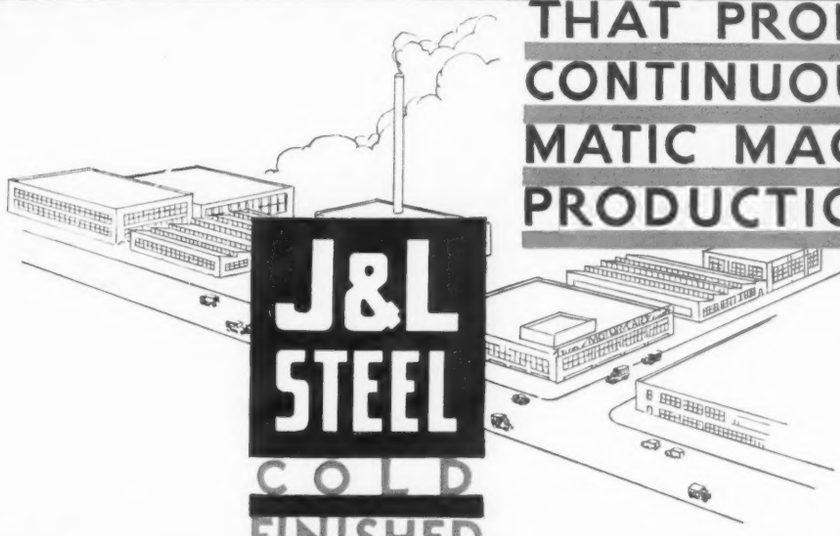
Machinists and other employes exposed to contact with cutting oils and emulsions frequently suffer from skin troubles affecting the hands and arms. To prevent these troubles from the use of oils and emulsions, three precautions are necessary.

First, a cutting oil should be used with a mineral oil content free from irritants. Second, the cutting fluid should be kept clean by filtration and sterilization. Third, workmen should be encouraged to give close attention to personal hygiene, an extremely important item.

—STEEL, 7-9-31

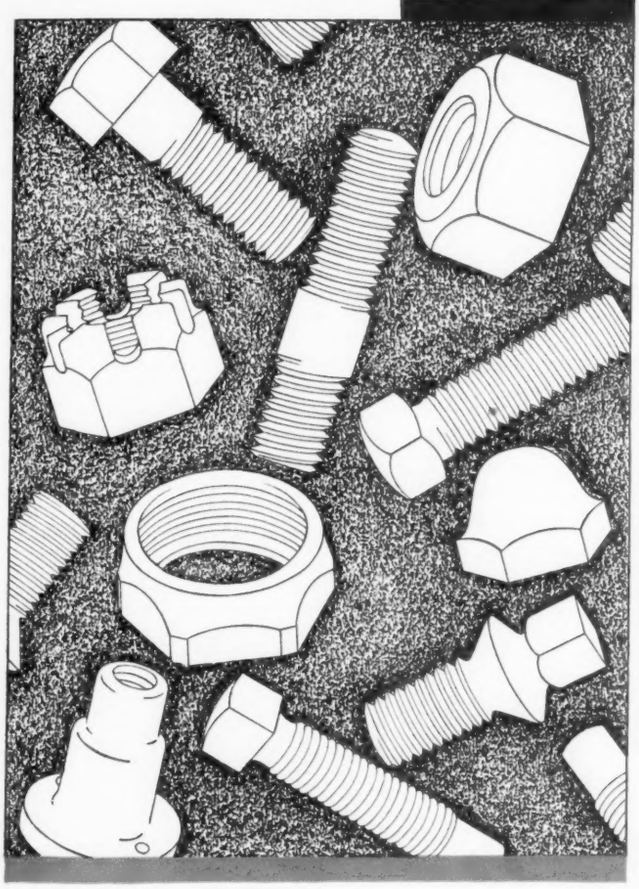
MACHINABILITY

THAT PROMOTES CONTINUOUS AUTOMATIC MACHINE PRODUCTION



J&L STEEL

COLD FINISHED



THIS ACCOUNTS FOR THE WIDESPREAD ACCEPTANCE OF J & L BESSEMER SCREW STEELS

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Machine Tools and Plant Equipment

«Without machine tools modern machinery could not be built.»
—Joseph W. Roe

Ball Transfers Effective In Materials Handling

Mathews Conveyor Co., Ellwood City, Pa., has brought out a new type of materials handling system designed to aoccomodate the movement of any objects having smooth hard surfaces, in any direction on a horizontal plane. The maker points out that application of this new system, which is made up of ball transfer units, is not confined to any particular type of work or to any one industry. The accompanying illustration shows assembly and details of design of one of the ball units, as well as the application of the system to the handling and transfer of sheet material.

Each unit consists of a large hardened steel ball which is free to rotate on a series of small balls retained in a cup-shaped base. Dust and dirt is excluded by a pierced cap, the hole in the top of which has a knife-edge contacting with the large ball. This cap is held in place by a spring retainer so that the knife-edge constantly deflects foreign matter which tends to cling to the large ball.

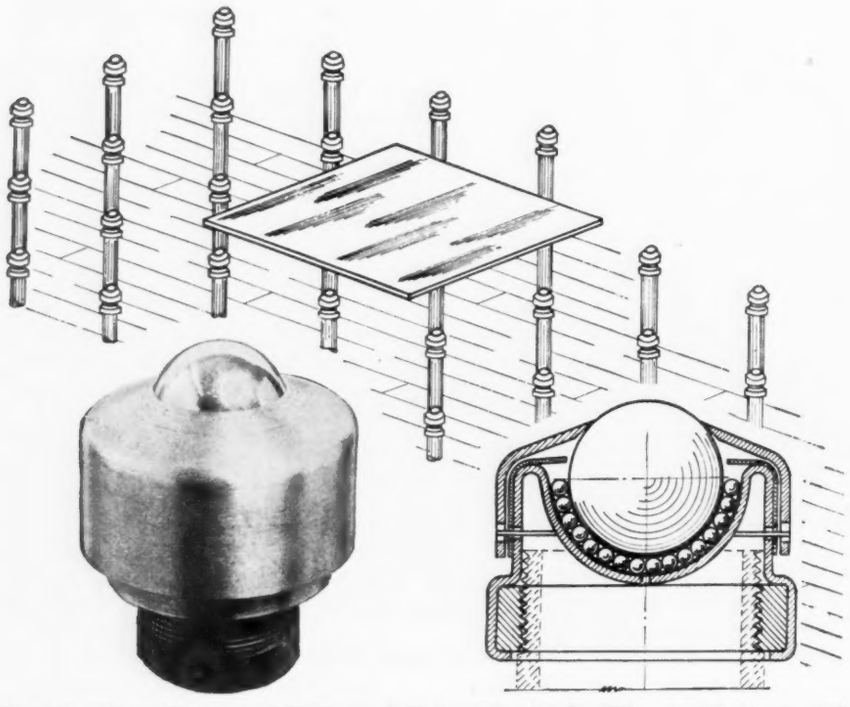
These ball units are available in two models, one for mounting in series on a table or other flat surface, the other for mounting on pipe supports. The illustration shows the last mentioned variety. When mounted in groups on a heavy structural support, these ball transfers provide an effective means for moving heavy shapes to and from shears, for conveying boxes to and from a conveyor line of roller or power type, for handling heavy cores or molds mounted on smooth bottom plates, etc.

Heavy-Duty Applications

A ball table, as a group of these ball transfers is called, also serves as an efficient turntable for rotating heavy work in connection with machining operations. When mounted on pipe supports fixed to the floor in any desired arrangement, these transfers provide an effective means for moving large plates, etc.

One type of unit for table mounting has a round base 4 inches in diameter, with four bolt holes. The other table type has a 3 inch square base, likewise with four bolt holes. For pipe mounting, the unit of this capacity has a coupling-type base threaded for 2-inch standard pipe. All three of these models contain 1½-inch hardened steel conveyor balls supported on 105 hardened steel bearing balls $\frac{3}{16}$-inch in diameter. Each unit has a load rating of 200 pounds.

The unit also is built in a heavy-duty model, with load rating of 500 pounds. This model contains a conveyor ball 2 inches in diameter. This model is of heavier proportions throughout, its base being of drop forged steel, threaded for standard 2-inch pipe.



Details and application of Mathews ball transfer for handling metal sheets and other objects with one hard smooth and flat surface

General Electric meter for recording actual electrical operating time

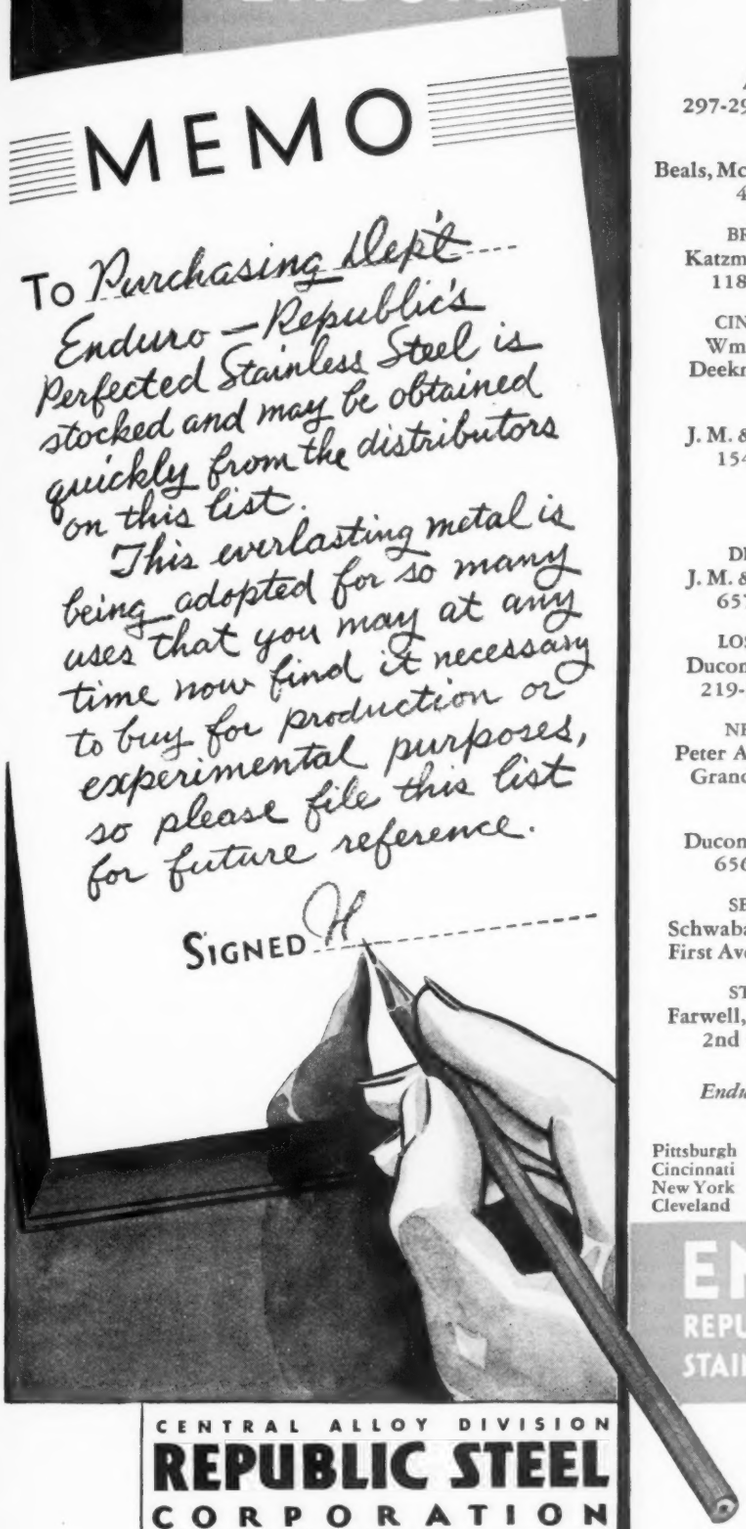
◆

Actual Operating Time Is Shown by New Meter

General Electric Co., Schenectady, N. Y., has introduced a meter which shows the actual operating time of any electrical equipment using alternating current. One of these instruments is shown in the accompanying illustration.

Within this meter is a synchronous motor like that used in an electric clock, which operates while the circuit of the equipment is closed. This motor, through suitable gearing, drives a cyclometer five-digit counter ar-

KEEPING A STEP AHEAD *with* ENDURO..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To Purchasing Dept.---
Enduro—Republic's Perfected Stainless Steel is stocked and may be obtained quickly from the distributors on this list.
This everlasting metal is being adopted for so many uses that you may at any time now find it necessary to buy for production or experimental purposes, so please file this list for future reference.
SIGNED H.

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ENDURO
REPUBLIC'S PERFECTED STAINLESS STEEL

"Manufactured under license from The Chemical Foundation, Inc., under basic patents No. 1316817 and No. 1339378."

ranged to read either in hours or in minutes.

This meter is recommended for checking piece rate operations, particularly when idle time credit is allowed in computing wages. A weekly reading of the meter shows how many hours the machine was in operation, hence—by deduction—the number of idle hours.

The instrument is supplied on a pedestal for portable use, as illustrated, or with a threaded connection for permanent mounting on conduit. It is available for 110, 220 or 440 volts, and for 25, 50 or 60 cycles, but no one unit has more than one voltage or frequency rating.

◆

Plain Hydraulic Grinder Handles 6-Inch Work

Landis Tool Co., Waynesboro, Pa., announces a new line of hydraulically operated plain cylindrical grinding machines designed for work of medium size on which rapid traverse is advantageous. These machines, one of which is shown in the accompanying illustration, are recommended by the maker for such work as universal joint spiders, small bearings, small motor armatures, light shafts, etc.

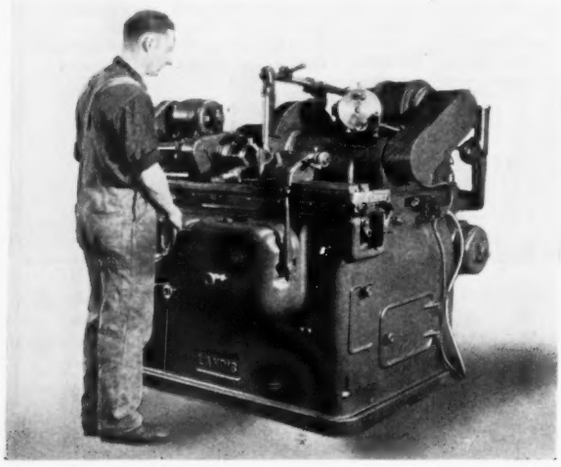
The bed is of box type having integral tanks for grinding compound and for oil used in the hydraulic system. The work carriage traverses on one flat guide and one V-guide having a vertical side, both guides having chilled surfaces. The guides are flood lubricated, filtered oil being supplied by the same pump which gives the hydraulic operating pressure. Provision is made to attain develop of the work carriage at its reversing points.

The wheel head also is supported by one V and one flat guide with chilled surfaces. Wheel spindle bearings are of steel backed babbitt, continuously lubricated by filtered oil. Spindle drive is through multiple V-belts at the right hand end from a balanced motor mounted on top of the wheel base casting at the rear. An 18 x 1½ x 8-inch grinding wheel is considered standard.

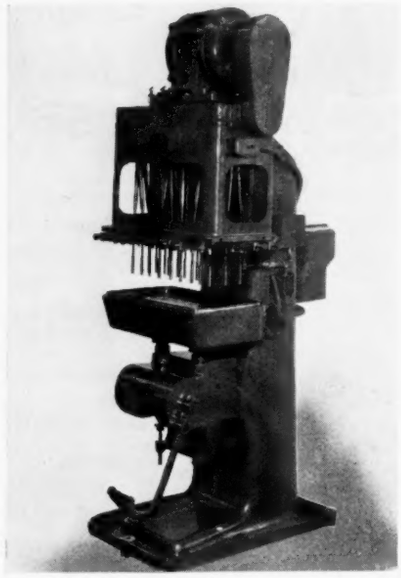
The hydraulic system consists of a twin cylinder table traversing mechanism and a Tuthill internal geared pump. The control valve is arranged to govern the flow of oil from the end of one cylinder into the corresponding end of the other, thereby giving smoothness of operation. The oil pump is mounted on the rear of the bed and, together with the coolant pump, is driven by a constant speed motor. Controls are grouped at convenient operating position and table traverse ranges from 6 to 240 inches per minute.

Standard equipment includes a plain wheel feed mechanism. At extra cost automatic hydraulic wheel feed mechanism can be supplied, and for certain kinds of high production work hydraulic straight infeed mechanism is available. The headstock is driven by a constant speed motor, four work speeds being possible by changing pulleys and belts.

The line comprises a 6 x 18-inch machine, weighing approximately 3750 pounds without electrical equipment, and a 6 x 30-inch machine weighing approximately 4000 pounds without electrical equipment.



Landis plain cylindrical grinder for universal joint spiders, small bearings, small armatures, light shafts, and similar work requiring rapid traverse. Hydraulic system and conveniently centralized control are features



Ex-Cello-O multiple spindle machine for production drilling and tapping

◆

Multiple Spindle Machine Drills and Taps

Ex-Cell-O Aircraft & Tool Corp., 1200 Oakman boulevard, Detroit, has developed a multiple spindle machine for drilling or tapping. This machine, which is illustrated herewith, has 21 full adjustable spindles, these having minimum center distance of 7/16 inch, and designed to drill or tap holes not exceeding ¼ inch in diameter.

The machine has a box frame of pedestal type, with overhung head and work table. The motor is mounted on top of the head, and drive is through short center V-belts. Spindle adjustment is permitted by standard double universal joint construction. Three cluster gears, driving through worm gears, operate each group of spindles in the upper portion of the head.

Work Table Movable

The work table proper on which suitable fixtures are mounted, is carried by two plungers within an outer tank member filled with cutting oil or compound. The complete table unit is designed so that when a foot treadle is depressed, the table remains stationary for a portion of the stroke, while the tank member moves upward. Thus the work is submerged in the cutting fluid while the drilling or tapping operation is going on. When the treadle is released, the central table, carrying the work, emerges from the cutting fluid so that unloading and reloading is carried out above its surface. The entire unit is counterbalanced to insure easy operation.

When set up for tapping, the spindles are threaded through their supporting arm to give correct lead to each individual tap. A reversible motor is provided when the machine is to be used for tapping. To operate the machine for tapping, work is placed in the fixture and the pedal depressed. Resulting upward move-

ment of the table operates a limit switch which starts the motor in forward rotation.

When the table contacts with its positive stop, it is held there by the operator while the tools feed into the work to predetermined depth. Then the motor reverses automatically and stops when the tools reach neutral position. For drilling, the motor runs in forward direction only, the foot treadle being used to give the feed.

◆

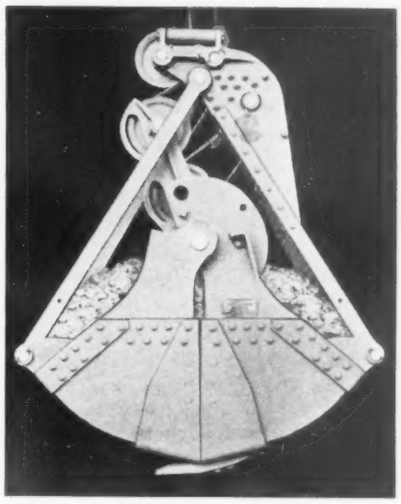
Production Vise Features Foot Treadle Operation

Simplex Tool Co., Woonsocket, R. I., announces a production bench vise which is operated by a foot treadle instead of by the conventional hand lever. One of these vises is shown in operation in the accompanying illustration.

The vise can be set for different sizes of work by means of a knurled screw at the front, this working in a nut held in the back jaw like an ordinary vise screw. Once this knurled screw is properly set to the thickness of a piece, only the foot treadle need be used for succeeding pieces of the same size. The treadle gives about ½-inch of jaw movement. When the foot is lifted from the treadle, a 300-pound spring is released to snap back and push two hinged pieces upward from a V-position, thereby exerting a toggle action which results in powerful gripping by the jaws.

This new vise to a large extent is assembled from parts used in the standard line of machinists' vises manufactured by this company. The toggle mechanism, which is independent of the vise proper, is designed so that it can be applied to any of the standard vises just mentioned.

Foot-operated production vise built by Simplex Tool Co.



Bucket having unusual digging power designed by G. H. Williams Co.

◆

Improvements Are Made in Line of Power Presses

Farrel-Birmingham Co. Inc., Ansonia, Conn., announces improvements in its line of power presses, which afford greater operating safety and lower maintenance cost. One of these improved presses is shown in the illustration at the lower right of this page.

In the case of the all-geared presses antifriction bearings are standard equipment on the driveshaft. Also, where conditions permit, an antifriction bearing is placed on each side of the main pinions in order to attain more uniform bearing of the pinion teeth on those of the gear, as well as to reduce friction.

Magnetic Control

Another feature is the use of a multiple disk friction clutch with magnetic control and magnetic brake. This unit, which was described on Page 41 of the June 25 issue of STEEL, is built by Magnetic Mfg. Co., Milwaukee. This magnetic equipment allows push button control, with as many start and stop stations at convenient points about the press as may be desired.

A selector switch and "inching" control enable the operator to run the press continuously, a stroke at a time, or inch by inch when setting dies. A positive stop on the up stroke makes repeating impossible except when continuous operation deliberately is selected by pushing the proper buttons. Stop buttons stop the press instantly at any point of the stroke under any of the selected operations. A rheostat may be used in series with the magnet to control the clutch to a given horsepower, which protects the press against breakage and gives added operating safety.

This company recently has enlarged its welding department so that large power presses and other machinery with all-steel frames can be fabricated by welding in minimum time.

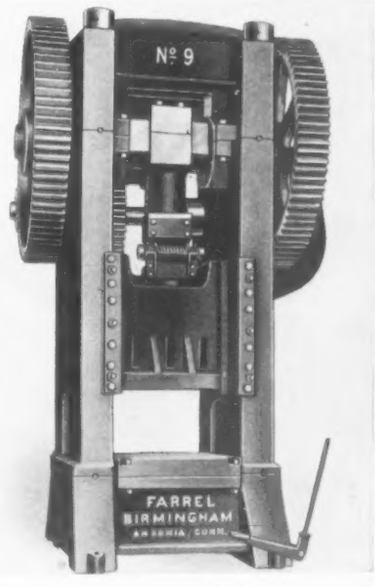
◆

Clamshell Bucket Provides Unusual Digging Power

G. H. Williams Co., Erie, Pa., announces a clamshell bucket designed to attain maximum digging power. The illustration at the left shows one of these buckets.

Digging power is due in a large measure to an original lever arm principle which provides straight cable leads, thereby reducing bearing friction. Side lead is eliminated, a feature which reduces wear on sheaves, shafts and cable. Additional closing leverage is gained by the use of extended corner brackets projecting well beyond the backs of the scoops.

Among other features, the maker calls attention to: Narrow cast steel head which resists twisting strains; extra long roller guards and large transverse roller, protecting cable in all directions; T-head corner pins fittings slots in corner brackets, which prevent turning as bucket opens and closes and minimize wear on corner



One of line of improved presses announced by Farrel-Birmingham Co.

Heavy duty socket wrench set made by Blackhawk Mfg. Co.

bar bushings as well as maintaining their alignment.

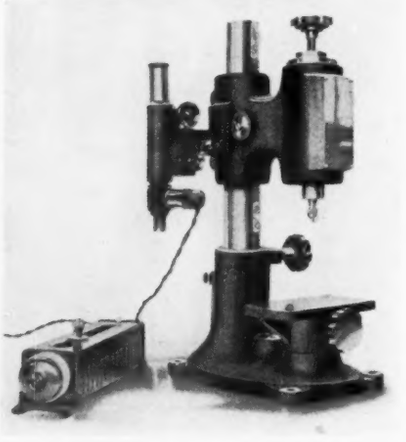
◆

Socket Wrench Set Built For Heavy Assembling

Blackhawk Mfg. Co., Milwaukee, has put on the market a set of extra heavy socket wrenches designed especially for use on heavy machinery assembly and on plant maintenance work. One of these sets, complete with its substantial pressed metal case, is shown in the illustration at the top of the page.

The wrenches are made of high quality steel and are chromium plated. They have double hexagon sockets, and by means of a lock-on feature they can be locked securely to handles and extensions, yet detached instantly by pressing a button. This feature is mentioned as of particular importance on work in cases where loss of a socket would result in injury or serious delay. The maker claims that the wrenches have rigidity comparable to solid tools. If desired, the sockets can be used as the ordinary quick detachable type.

The set illustrated includes sockets for U. S. standard bolts and nuts from 1¼ to 2⅜ inches. Larger sizes also are available.



Firth hardness testing instrument sold by Tinius Olsen Testing Machine Co.

◆

Pivoted Motor Base Gives Floating Drive Action

Kritzer Co., 515 West Thirty-fifth street, Chicago, has developed a new type of electric motor base which allows the motor to float on the load, thereby permitting successful use of short center belt drives without resorting to idlers. It is useful with V-belt as well as with flat belts. One of these bases, with motor mounted thereon, is shown in the illustration appearing at the right.

It is pointed out by the builder, that the weight of the motor does not hang on the belt, but that this weight is balanced and torque regulates the belt tension. The base consists of two parts, a fixed section bolted to the foundation, and a pivoted section mounted on trunnions above this fixed section.

How the Base Functions

When the motor is not operating, the rear of the pivoted section lifts, thereby easing the tension on the belt. When power is first applied, the inertia of the driven unit locks the rotor, causing the rear of the pivoted section to sink down, thereby tightening the belt to give maximum pull. In running position, conditions appear as in the illustration, the floating action maintaining proper tension automatically and continuously.

◆

New Hardness Testers Use Light Load Cylinders

Tinius Olsen Testing Machine Co., 500 North Twelfth street, Philadelphia, announces that it now is marketing in the United States the brinell-type hardness testing instruments developed by Thos. Firth & John Brown Ltd., Sheffield, England. One of these instruments, complete with its accessories, is shown in the illustration appearing at the lower left of this page.

These instruments use lighter loads than ordinarily employed in forcing their small steel balls or diamond pyramids into the material being tested. This makes them useful in cases where thin material must be tested or when a minimum indentation is necessary. The steel ball is used on thin or soft materials, while the diamond indenter is used on hard material such as case hardened, cyanided or nitrided surfaces. Of the two, the diamond indenter leaves the smaller mark.

Loads of 120, 30 or 10 kilograms are employed, depending upon general characteristics of the work. Either ball or diamond can be used under any of the above loads. The 120-kilogram load serves the purpose on hard and medium steels down to 1 millimeter thick, or on soft metals down to 2 millimeters thick. With a 30-kilogram load cylinder, similar materials down to ½-millimeter or 1 millimeter in thickness can be tested. The 10-kilogram load cylinder is used on exceedingly thin materials such as sheets, plates, etc.

Pivoted motor base giving floating drive developed by Kritzer Co.

One major difference between this instrument and others is that the diameter or diagonal of the depression is measured, instead of its depth. The reason is that the diameter or diagonal is from eight to sixteen times as great as the depth of the depression, which permits accurate and consistent results when a small indentation is to be measured.

A microscope is used to measure the depression, because of its reliability. The indentation itself remains as a permanent record of hardness, since by the use of a microscope only the indentation later can be checked. This new instrument permits quick swinging of the indenter head out of the way to permit equally quick swinging of the microscope into place —these elements being mounted on arms which pivot around the center support.

When fitted with a microprojection head, these instruments can be read at a glance, which is a distinct advantage on many types of production work.

Operations Rebound from Holidays

Resume with Loss of Only 1 Point, Now 33-34 Per Cent—June Steel and Iron Output Down—Markets Marking Time—Scrap Prices Higher

STEELWORKS operations are making a quick recovery from the widespread July 4th shutdown, indicating that the rate of production cannot go much lower. Though irregularity is characteristic of July operations thus far, the belief persists the bottom will be reached this month and the industry really is at the turning point. Many steel producers are resuming pre-holiday schedules this week, and operations are at 33-34 per cent, down only 1 point from last week.

To fairly substantial specifications which could not be filled last week must be ascribed the relatively short duration of the dip in operations. There is nothing in the immediate outlook justifying expectations of considerable improvement until seasonal influences develop in the fall. The present slack period appears to be building confidence in that recovery.

The edge has been taken off the proposed freight increase as a spur to buying, since the interstate commerce commission has decided to hold public hearings in July and August, strengthening the impression that final action will be deferred until late in the year. Meanwhile, the proceedings effectually stop the railroads from giving attention to wages. Railroads are slow to issue releases for steel, and there now seems no possibility of secondary rail buying this season. The Northern Pacific is expected to place 500 underframes soon.

While demand from the automotive industry continues to taper, no steep recession is expected this month. Output for the four producers introducing new models will be higher in July than in June, and weekly production for the industry as a whole remains fairly constant around 61,000 units.

Important plate releases are developing from the financing of East Texas storage tank projects. An order for 20,000 tons of plates for a 20-inch gas line from Tioga county, Pa., to Syracuse, N. Y., for the Lycoming Natural Gas Co. has been placed with National Tube Co. and Spang, Chalfant & Co. Standard Oil of New Jersey is inquiring for 5000 tons of cast iron pipe for a refinery in France.

Structural steel awards this week approximate 32,500 tons, compared with 19,199 tons last week. Fresh inquiry, 70,600 tons, includes 45,000 tons for the Chicago postoffice.

Daily output of steel ingots in June amounted to 79,843 gross tons, down 17 per cent from the 96,365 tons in May, and the lowest since last December. Total production for June was 2,075,910 tons; and for the first six months this year, 15,258,519 tons, or 64 per cent of the 23,578,619 tons made in the first half of last year.

Daily average pig iron production in June at 54,599 tons dropped 15.2 per cent from 64,355 tons in May, and was the lowest since January, 1922. Output for June was 1,637,998 tons, and for the first six months of the year 11,498,122 tons, a reduction of 39.2 per cent from 18,304,614 tons produced in the first half of 1930. Active stacks June 30 numbered 91, 14 fewer than May 31.

STEEL's iron and steel composite this week is unchanged at $31.11; the composite representing finished steel also is unchanged, at $48.82, while the steelworks scrap composite is up 8 cents to $8.58.

Composite Market Averages

	This Week (July 8)	Last Week (July 1)	One Month Ago (June, 1931)	Three Months Ago (April, 1931)	One Year Ago (July, 1930)	Ten Years Ago (July, 1921)
Iron and Steel Composite ..... (Pig iron, billets, slabs, sheet bars, wire rods, pipe, tin plate nails, sheets, plates, shapes, bars)	$31.11	$31.11	$31.02	$31.59	$33.21	$38.14
Finished Steel Composite ..... (Plates, shapes, bars, sheets, hot strip, nails, wire, tin plate, pipe)	48.82	48.82	48.60	49.22	51.90	60.54
Steelworks Scrap Composite ..... (Melting steel, compressed sheets)	8.58	8.50	8.84	10.12	12.58	9.94

Comparative Prices of Iron, Steel and Coke

Representative Market Figures for This Week, Last Month, Three Months and One Year Ago

	July 8, 1931	June, 1931	April, 1931	July, 1930
PIG IRON				
Bessemer, del. Pittsburgh	$18.26	18.26	18.26	20.46
Basic, valley	17.00	17.00	17.00	18.20
Basic, eastern del. eastern Pa.	17.00	17.00	17.25	18.00
No. 2 foundry, del. Pittsburgh	18.26	18.26	18.26	19.46
No. 2 foundry, Chicago	17.50	17.50	17.50	17.90
*Southern No. 2, Birmingham	12.00	12.00	13.00	14.00
**No. 2X, Virginia furnace	18.25	18.25	18.25	18.25
**No. 2X, Eastern del., Phila.	17.75	17.76	18.26	20.26
Malleable, valley	17.00	17.00	17.00	18.70
Malleable, Chicago	17.50	17.50	17.50	17.90
Lake Superior, charcoal, del. Chi.	27.04	27.04	27.04	27.04
Gray forge, del. Pittsburgh	17.63	17.63	17.63	18.83
Ferromanganese, del. Pittsburgh	89.79	89.79	89.79	103.79

*1.75 to 2.25 silicon. For local delivery. Northern shipments based on $11, Birmingham. **2.25 to 2.75 silicon.

COKE				
Connellsville furnace, ovens	2.40	2.40	2.50	2.50
Connellsville foundry, ovens	3.25	3.25	3.25	3.50
SEMIFINISHED MATERIAL				
Shee bars, open-hearth, Youngs.	29.00	29.00	30.00	31.00
Sheet bars, open-hearth, Pitts.	29.00	29.00	30.00	31.00
Billets, open-hearth, Pittsburgh	29.00	29.00	30.00	31.00
Wire rods, Pittsburgh	35.00	35.00	36.00	36.00

	July 8, 1931	June, 1931	April, 1931	July, 1930
FINISHED MATERIAL				
Steel bars, Pittsburgh	1.65	1.65	1.65	1.70
Steel bars, Chicago	1.70	1.70	1.80	1.80
Steel bars, Philadelphia	1.94	1.94	1.96	1.94
Iron bars, Chicago	1.70	1.70	1.80	1.90
Shapes, Pittsburgh	1.65	1.65	1.65	1.65
Shapes, Philadelphia	1.76	1.76	1.78	1.66
Shapes, Chicago	1.70	1.70	1.80	1.75
Tank plates, Pittsburgh	1.65	1.65	1.65	1.65
Tank plates, Philadelphia	1.85½	1.85½	1.85½	1.85½
Tank plates, Chicago	1.70	1.70	1.80	1.75
Sheets, No. 10 blue anneal., Pitts.	1.85	1.85	1.85	2.00
†Sheets, No. 24, hot, ann., Pitts.	2.40	2.15	2.25	2.55
Sheets, No. 24, galvan., Pitts.	2.90	2.80	2.85	3.15
Sheets, No. 10 blue anneal., Chi.	2.00	2.00	2.05	2.15
†Sheets, No. 24, hot, ann., Chi.	2.55	2.40	2.45	2.70
Sheets, No. 24 galvan., Chi.	3.00	2.95	3.00	3.35
Plain wire, Pittsburgh	2.20	2.20	2.20	2.30
Wire nails, Pittsburgh	1.80	1.80	1.90	2.10
Tin plate, per base box, Pitts.	5.00	5.00	5.00	5.25

†Comparisons are with old classification No. 24 black sheets.

SCRAP				
Heavy melting steel, Pitts.	10.25	10.30	12.50	14.90
Heavy melting steel, eastern Pa.	8.00	8.75	10.00	12.50
Heavy melting steel, Chicago	8.50	8.50	9.60	12.00
No. 1 wrought, eastern Pa.	10.00	10.00	11.00	14.25
No. 1 wrought, Chicago	8.25	8.25	8.80	11.25
Rails for rolling, Chicago	10.50	10.90	11.85	14.50

Sheets

Mills Holding to New Prices, but Orders Are Small—Real Test Is Expected to Come Late in July

SHEET PRICES, PAGE 59

Pittsburgh—Sheet mills received a relatively large volume of business during the last days of June as a result of the advance instituted on prices for third quarter. This influx of orders, however, will prevent a test of new quotations until the latter part of this month or early August since shipments against old contracts will be continued during July. Contracting also has been quiet since consumers will not be required to place new orders for several weeks. Mills are making a determined stand on new quotations which in some cases represent substantial advances over old levels. On new business producers are quoting 2.40c, Pittsburgh, for hot rolled annealed sheets, 1.85c for blue annealed, 2.90c for galvanized and 3.10c for autobody. Mill operations are expected to be higher this week following a let down at some plants over the holiday period although the average for the industry is not much above 35 per cent.

New York—Sheet sellers do not expect the new prices to receive a test before the end of the month. Most consumers are covered for the present.

Philadelphia—Sheet sellers do not expect a definite test of the new price schedules until consumers generally begin contracting for beyond July 30. The new prices are holding on small orders.

Buffalo—Considerable inquiry is pending with all producers apparently holding to scheduled prices. A 350-ton order for a special grade for roofing an armory here was closed.

Youngstown, O.—While it was expected that most independent sheet mills in this district would be slow to recover from the Fourth of July shut down, this did not prove true in several instances.

One important full-finished producer was compelled to start his mills Tuesday to run through the week. Another large producer of common sheets finds his books filled with specifications that will require three weeks to work off. Sales are being made under the new classifications. Consumers are not objecting to paying the new prices provided the prices are held uniformly.

Considerable tonnages have been placed for July delivery on the old price basis. Water-borne sheets in the southern part of the state, sold under the old basis for July delivery, have brought out some unusual prices. For instance, galvanized sheets are said to have been sold at 1.71½c delivered to certain cities in Mississippi, which is considerably below the equivalent Pittsburgh base.

Cleveland—Mills placed fairly large tonnages on their books for immediate and later rolling dates as June closed. For several interests sales have been on the upgrade over the past two weeks and the attitude of buyers is favorable to the new classification of mill bases on hot and cold-rolled grades. .However, due to the late June specifying, a slight lull has developed in the first week of July. The new price list is firm, and without individual deviation. Several large orders for barrel stock were placed last week. Sentiment has improved markedly.

Cincinnati—Books of sheet mills reflect a late rush to cover early requirements under the old price schedule. Production was stepped up to nearly 50 per cent.

Chicago—Sheet orders on the third quarter price basis have been negligible, although fair accumulations from buyers taking advantage of the old prices were noted toward the close of June. Sheet mill operations are being maintained at 40 to 50 per cent. The quotation of 3.00c, mills, for No. 24 galvanized has not had to withstand competition for quantity business. Roofing orders from the Southwest are likely to appear in about 30 days.

Current Finished Steel Prices

Prices in cents per pound unless otherwise stated

Steel Sheets

HOT ROLLED No. 10

Pittsburgh base	1.70c
Gary, Ind. Harbor, base	1.80c
Chicago, del.	1.85c
Philadelphia, del.	1.99c
Birmingham, base	1.85c

BLUE ANNEALED No. 9-10

Pittsburgh, base	1.85c
Chicago, district mills	1.95c
Chicago, delivered	2.00c
Philadelphia, del.	2.14c
St. Louis, delivered	2.25½c
Birmingham	2.00c to 2.05c
San Francisco, c.i.f.	2.50c

HOT ROLLED ANNEALED No. 24

Pittsburgh, base	2.40c
Gary, Ind. Harbor, base	2.50c
Chicago, del.	2.55c
Philadelphia, del.	2.69c
Birmingham, base	2.55c

GALVANIZED No. 24

Pittsburgh, base	2.90c
Gary, Ind. Harbor, base	3.00c
Chicago, del.	3.05c
Philadelphia, base	3.19c
Birmingham, base	3.05c
St. Louis, del.	3.25½c

AUTOMOBILE No. 20

Pittsburgh, base	3.10c

FURNITURE

Pitts., No. 10 heavy	2.75c
Pitts., No. 20 light	3.35c

TIN MILL BLACK No. 28

Pittsburgh, base	2.55c to 2.65c
Gary base	2.65c to 2.75c

HEAVY COLD ROLLED No. 10

Pittsburgh base	2.35c
Gary, Ind. Harbor, base	2.45c
Chicago, del.	2.50c
Philadelphia, del.	2.64c

COLD ROLLED No. 20

Pittsburgh, base	2.95c
Gary, Ind. Harbor, base	3.05c
Chicago, del.	3.10c
Philadelphia, del.	3.24c

Tin and Terne Plate

Prices per 100 pound box Pittsburgh

Tin plate, coke base	$5.00

Gary, Ind., base 10 cents higher.

Long ternes, 24, unassorted, lb.	3.15c

Wire Products

(To Jobbers-Merchant Trade)

F.o.b. Pittsburgh, Cleveland base
(Per 100 pound keg)

Standard wire nails	$1.80 and 1.90
Cement coated nails	1.80 and 1.90
Galvanized nails	3.80 and 3.90

(Per pound)

Polished staples	2.35c and 2.45c
Galvanized staples	2.60c and 2.70c
Barbed wire, gal.	2.55c and 2.65c
Annealed fence wire	2.35c and 2.45c
Galvanized wire	2.80c and 2.90c

Woven wire fencing, retailers, Pittsburgh-Cleveland, net ton $65.

(To Manufacturing Trade)

Plain wire, 6-9 gage	2.20c
Spring wire	3.20c

Joliet, DeKalb, Waukegan, Ill., Anderson, Ind., Chicago, $1 over Pitts.-Cleve.; Duluth and Worcester, Mass., $2 higher; Fairfield, Ala., $3 higher.

Rivets

Struc. c.l., Pitts.-Cleve.	2.75c
Struc., c.l., Chicago	2.85c
7/16-in. smaller, Pitts.	70, 10 and 5 off
Chi., Cleve.	70 to 70, 10 and 5 off

Steel Plates

Base, Pittsburgh	1.65c
Philadelphia, del.	1.81½c to 1.85½c
New York, delivered	1.93c
Boston, delivered	2.05c
Chicago, base	1.70c to 1.80c
Cleveland, delivered	1.83½c
Lackawanna, N. Y., base	1.75c to 1.80c
Birmingham, base	1.80c to 1.85c
Coatesville, Pa., base	1.75c
Pacific Coast, c.i.f	2.00c
St. Louis, del.	1.95½c

Structural Shapes

Base, Pittsburgh	1.65c
Philadelphia, del.	1.71c to 1.76c
New York, del.	1.85½c to 1.90½c
Boston, del.	1.98½c
Chicago, base	1.70c to 1.80c
Cleveland, delivered	1.83½c
Lackawanna, N. Y., base	1.75c to 1.80c
Birmingham base	1.80c to 1.85c
Pacific Coast, c.i.f.	2.05c to 2.15c

Bars

SOFT STEEL

Pittsburgh, base	1.65c
Chicago, base	1.70c to 1.80c
Birmingham base	1.80c to 1.85c
Lackawanna, N. Y., base	1.70c to 1.75c
Pacific Coast, c.i.f.	2.05c
Cleveland, base, local del.	1.70c
Cleveland base, out. del.	1.65c
Philadelphia, del.	1.94c
New York, del.	1.98c
Boston, del.	2.05c
Pittsburgh, cold finish	1.85c
Pittsburgh, forg. qual.	1.90c

RAIL STEEL

Chicago Heights	1.60c
Eastern mills	1.50c to 1.55c
Pittsburgh	1.30c to 1.35c

IRON

Chicago, base	1.70c to 1.80c
New York, delivered	1.93c to 2.03c
Philadelphia, delivered	1.89c
Pittsburgh, refined	2.75c to 4.25c

REINFORCING

Pitts., billet cut lengths	1.90c
Stock lengths, mill	1.60c to 1.65c
Chi., billet	1.80c
Chi., rail steel	1.50c to 1.65c
Chi., rail steel, bridge and culvert	1.65c
Philadelphia, cut lengths	2.19c
Cleveland, cut lengths	1.95c to 2.05c

Cold Finished Steel Bars and Shafting

Base, Pittsburgh, Chicago, Buffalo and Cleveland	2.10c
Shafting, turned and ground, mill	2.45c to 2.90c

Corrosion, Heat Resist. Alloys

Base, Pittsburgh

18 per cent chrome, 8 per cent nickel
Sheets, 35c; plates, 31c; bars, 28c.

	A	B	C	D
Bars	19c	20.5c	23c	28c
Plates	21c	22.5c	25c	30c
Sheets	26c	27.5c	30c	35c
Hot strip	19c	20.5c	23c	28c
Cold strip	28c	29.5c	32c	37c

Carbon 0.12 and under; no nickel. A has chrome 15% and under, B over 15/18% inc., C over 18/23% inc., D over 23/30%.

Wrought Washers

Carloads, Pitts. dist.	$6.50 to $6.75 off
Carloads, Chicago dist.	7.00 to 7.50 off

Alloy Steel

Hot Rolled—F.o.b. Mills
Alloy Quality Bars, 2.65c, mill

S.A.E.	Alloy Diff.	S.A.E.	Alloy Diff.
2000	0.25	1.25-1.75 Ni.	1.05
2100	0.55	5100 .80 - 1.10	
2300	1.50	Cr.	0.45
2500	2.25	51.00 Cr.	
3100	0.55	spring	0.20
3200	1.35	6100 bars	1.20
3300	3.80	6100 Spring	0.95
3400	3.80	Cr., Ni., Van.	1.50
4100 .15 to .25 Mo.	0.50	Carbon Van.	0.95
4600 .20 to .30 Mo.		9250 (flats)	0.25
		9250 (rds.,sq.)	0.50

Strip, Hoops Bands

Hot strip, to 6-in., Pitts.	1.65c
Do, 6 6/16 to 24-in., Pitts.	1.55c
Hot strip, bands 6 in. and under, Chicago	1.75c to 1.80c
Do. 6 1/16 to 24 in.	1.65c to 1.70c
Cooperage hoop, Pitts.	1.70c to 1.80c
Do, Chicago	2.00c to 2.10c
Cold rolled strip, Pitts., Cleve., 3 tons, over	2.15c to 2.25c
Worcester, 3 tons, over	2.40c

Rails, Track Material

Standard bess. and open hearth rails, mill	$43.00
Relay rails, Pitts., 20 to 45 lbs.	$22.00 to $26.00
50 to 75	20.00 to 24.00
80 to 100	24.00 to 27.00
Light rails, 25-45, mills	$34.00
Light rails, Chicago	$36.00
Angle bars, Chi. base	2.75c
Spikes, railroad, mills	2.70c
Spikes, railroad, 7/16-in. and smaller, Pitts.	2.70c
Spikes boat, barge, Pitts.	2.90c
Spikes, railroad, Chi.	2.80c
Track bolts, Pitts., steam roads	3.80c
Do. standard, jobbers	73 off list
Track bolts, Chicago	3.80c
Tie plate, mills	$39.00

Bolts and Nuts

Pittsburgh, Cleveland, Birmingham, Chi.
Discounts to legitimate jobbing or large consuming trade for full-case lots apply to May 10, 1930, lists.

CARRIAGE BOLTS

All sizes, cut thread ..... 73 and 10 off
Rolled thread ⅜ x 6 and smaller take 10 per cent lower list.
Eagle list ..... 73 and 10 off

MACHINE BOLTS

All sizes, cut thread, lag screws, plow bolts, Nos. 1-2-3-7 heads, tap bolts, blank bolts, stud bolts without nuts ..... 73 and 10 off
Tire bolts, 60, 10 and 10 off.
Stove bolts, 80, 10, 10, 5 off in pkgs.; 80, 10, 5, 2½ off in bulk.
Rolled thread machine bolts, ⅜ x 6 and smaller take 10 per cent lower list.

NUTS

Semifinished ..... 73 and 10 off

HEXAGON CAP SCREWS

Milled ..... 80-10-10-5 off
Upset 1 in. diam. and smaller ..... 85-10 off

SQUARE HEAD SET SCREWS

Milled ..... 80-5 off
Upset 1 in. and smaller ..... 80-10-5 off
Upset, larger than 1 in. ..... 80-5 off

Cut Nails, Chain, Piling

Cut nails, c.l. Pittsburgh 2.50c
Do, less carloads, 5 kegs or over, 2.75c; less than 5 kegs 2.90c.
Chain, BB, BBB, 9/16-1½ in. ..... 33 1/3 off
Sheet piling, Pitts. 1.90c

Bars

Third Quarter Contracting Is in Fair Volume—Prices Fairly Steady—Production Less

BAR PRICES, PAGE 59

Chicago—A number of regular contract buyers have obligated themselves for third quarter on bars and other heavy rolled products at the existing base price of 1.70c, Chicago. Others have come under cover against specific work or programs in sight, extending through part of third quarter. Forward inquiries, due to the slump in such major buying groups as the automotive and farm equipment, are disappointingly light. Specifications, as expected for the end of the quarter, were above recent averages. One producer notes the heaviest specifications and sales since 30 days ago, when the customary month-end bulge in shipping requirements occurred. Reinforcing bars are among the most active bar products now. Soft steel bar production is slightly off. Alloy and soft steel bar schedules average 35 to 40 per cent.

New York—The carload price on commercial steel bars appears fairly steady at 1.65c, Pittsburgh. Tonnage is light, but sellers show little disposition to offer concessions to attract business. Forging interests report a slight improvement in inquiry.

Philadelphia—Steel bars are easy at 1.65c, Pittsburgh, for carlots and concessions for larger tonnages. Demand is irregular. Iron bars are nominally 1.60c, Pittsburgh.

Pittsburgh—Steel bar demand shows a slight gain in some directions but total activity is unimproved. Third quarter contracting has been fairly good, which producers take as an indication that buyers believe that present prices are at the bottom. The market has been fairly steady at 1.65c, Pittsburgh, although occasional orders still are going at 1.60c. Requirements of cold bar finishers reflect the further decline in automotive needs.

Youngstown, O.—Buyers of common steel bars have placed fairly satisfactory tonnages under contract with district mills for third quarter. Apparently, consumers are content to pay 1.65c, Pittsburgh, which has shown no sign other than of strengthening. Alloy steel bars continue in fair demand from auto partsmakers.

Cleveland—Contracts for third quarter bar needs have been covered in better quantity the past few days after marked quiet immediately following the beginning of July. Customers, however, are continuing to order out only small lots and generally specify quick delivery. The local merchant steel bar base of 1.70c, Cleveland base, for local delivery, and 1.65c, same base, for outside delivery, is holding unchanged.

Cold-Finished Bar Sales Restricted Further

Cold Finished Prices, Page 59

Pittsburgh—Activity in cold finished steel bars is restricted further by additional moderation in automotive operations. Incoming business and shipments are quieter than a month ago and received little stimulation as a result of the end of the quarter in view of the fact that prices are unchanged in the new period. The market generally is 2.10c, Pittsburgh.

Cleveland—Though third-quarter price of 2.10c, Cleveland, has been announced contracting is extremely slow to develop, customers apparently believing their needs can be covered by spot specifications. Current releases are so characterized, tonnages in aggregate being small and mill operations in like proportion.

Tin Plate Production Holds at 65 Per Cent

Tin Plate Prices, Page 59

Pittsburgh—Tin plate specifications are steady and operations are well maintained. Production continues fully 65 per cent, one independent mill that was down partly for repairs a week ago having resumed at a full rate. June shipments were heavy but some decline is anticipated for July. The market continues $5, Pittsburgh, per base box.

Plates

Inquiry for East Texas Tank Projects Increasing—Pipe Line Shipments Expected to Slow

PLATE PRICES, PAGE 59

Chicago—Tank plate inquiry is growing in importance, since some of the proposed East Texas storage projects have been financed. It is expected 4000 to 5000 tons may be closed shortly, while about 5000 tons in additional inquiry is taking shape. Local fabricators have booked 3000 tons for Oklahoma City territory. Pipe line shipments again are likely to be curtailed about the middle of this month, which may bring plate mill operations down to below 40 per cent. Occasional contracts for third quarter are closed on the basis of 1.70c, Chicago. A boat builder has ordered about 300 tons, and 2000 to 3000 tons is pending for barge construction.

New York—While there has been some shading of $1 a ton, the usual carload price on plates is 1.75c, Coatesville, Pa. There is a fair scattering of small orders, but little of special note.

Approximately 700 tons of plates are required for five distilling units for the Amtorg Trading Corp., to be fabricated by Alco Products Inc.

Philadelphia—Plates are moving slowly at 1.71c to 1.75c, base, Coatesville, Pa., in carload lots. Action is expected this week on approximately 4000 tons for a gas holder for the United Gas & Improvement Corp., Philadelphia. Bids will be opened July 13 on 400 tons of sheet piling for jetties at Cape May, N. J.

Pittsburgh—New plate business is quiet and specifications against old orders lack improvement. Prices show little additional strength, generally being 1.65c but subject to some shading.

Cleveland—Moderate improvements in inquiry have not been reflected in like gains in sales. Same asking prices for second quarter have been carried over into the third but a marked absence of interest is general among contract takers who continue to specify from material placed in the last quarter. Because no land had been purchased for a proposed 1,000,000-gallon tank at Euclid, O., low bid of the Graver Tank & Mfg. Co., East Chicago, Ind., has been temporarily rejected by the Cleveland board of control. City of Columbus has appropriated $226,000 for a sewage disposal standby tank south of Main street. The Belvoir boulevard de-

velopment, locally taking 2500 tons of plates is still pending. Due to large orders for platforms for oil refineries, Fleming Structural Steel Co., New Castle, Pa., is booked up to capacity operations for the next two months.

Contracts Placed

575 tons, 50 gasoline storage tanks for Wright Field, Dayton, O., to Buffalo Tank Corp., Buffalo, N. Y., through Aqua Systems Inc., New York City.
150 tons, gasoline storage tanks, Pensacola, Fla., bureau of yards and docks, to Chicago Bridge & Iron Works, Chicago.

Contracts Pending

300 tons, piling, dock basin, City of Cleveland; bids July 7.
250 tons, 3 to 8-inch welded steel pipe, Vista Irrigation district, Vista, Calif.; bids July 24.
140 tons, diesel oil tanks, bureau yards and docks, for San Diego, Calif.; Chicago Bridge & Iron Works, Chicago.
135 tons, hull plate steel, navy department for Brooklyn; bids July 14.
120 tons, 20 pontoons for United States engineers, Vicksburg; Chicago Bridge & Iron Works, Chicago, low.

Financial News of Steel Industry

WESTINGHOUSE ELECTRIC & MFG. CO., East Pittsburgh, Pa., has declared regular dividends of 2 per cent on the preferred and 2 per cent on the common both payable July 31 to record July 6.

□ □ □

American Car & Foundry Co., New York, for year ended April 30 earned $4.68 a share on the 7 per cent preferred, against $5.44 a common share in the preceding year.

□ □ □

Apollo Steel Co., Pittsburgh, has passed quarterly dividend due at this time. Three months ago distribution of 15 cents was declared.

□ □ □

Perfect Circle Co., Hagerstown, Ind., earnings in May, 1931, were the largest of any month in the history of the company. Five months' earnings, after all charges, at $348,970 or $2.15 a share, covers the entire year's dividend requirement of $2 a share.

Wire Rope Contract Let

Washington, — Announcement is made of award of 3600 feet of wire rope for the United States engineer, Vicksburg, Miss., on a bid of $1574 to the Black Wire Rope Co., Peoria, Ill.

Railroads

Car Buying Small and Scattered —Occasional Rail Repair Work Noted—Mill Operations Steady

TRACK MATERIAL PRICES, PAGE 59

Chicago—Possibilities of occasional steel specifications for rolling stock repairs are noted. Several car builders have added to their forces for prospective maintenance and repair work. Chicago, Great Western railroad is specifying 2000 to 2500 tons of steel products for car repairs. Northern Pacific is expected to buy 500 additional underframes.

Rail mills are expected to continue at 25 to 30 per cent operation for the remainder of July, as unfilled orders still are of consequence. Virtually no possibility is seen of secondary buying this season. If western carriers were to order out all of the primary rail purchases for 1931, it is indicated specifications could be spread over the next 60 days at the existing rate of rail mill operations. Track fastenings orders are holding up well, with sales averaging about 1000 tons weekly. Not much finished steel business from car buying is considered likely this year, as it is pointed out that if car orders were to appear now, specifications would not be ready until September.

New York—Car buying is generally light with little pending. Twenty subway passenger cars have been placed for export to South America.

Pittsburgh—Railroads are slow to issue releases against old orders for track material and with the exception of the inquiry of the Norfolk & Western railroad pending, business is light. This road as yet has not issued inquiries for material to be used in connection with its rebuilding of 450 steel hoppers.

Car Orders Placed

Bangor & Aroostook, two switchers, to American Car & Foundry Co., New York.
Illinois Midland railroad, four caboose cars, to Pullman Car & Mfg. Corp., Chicago.
Ferrocarril Terminal Central de Buenos Aires, twenty subway passenger cars, to Pullman-Standard Car Export Corp., Chicago; Osgood Bradley Car Co., division, Worcester, Mass.
Union Tank Line, 100 car tanks to Graver Tank & Mfg. Co., East Chicago, Ind.

Car Orders Pending

American Railway Co. of Porto Rico, 100 steel cane cars; bids July 7.

U. S. Pressed Steel Co., Ypsilanti, Mich., has changed its capital stock from $200,000 to 50,000 shares of no par value.

Semifinished Steel Demand Is Slower

Semifinished Prices, Page 70

Pittsburgh — Semifinished steel continues quiet, few contracts for third quarter having been signed and consumers placing only small lots as the occasion warrants. Shipments are moderately smaller than a month ago. Prices are unchanged, the general market being $29 for rerolling billets, slabs and sheet bars, some producers still quoting $30. Forging billets are $35 to $36 and wire rods $35.

Philadelphia—Billet demand is quiet and prices are unchanged at $29, Pittsburgh, for rerollers and $35 for forging quality. The Panama canal commission will take bids to July 23 on a small lot of nickel alloy billets.

Youngstown, O.—A few contracts have been placed with district producers for third quarter. Most nonintegrated independent mills in this district continue to cover only immediate needs. Billets, sheet bars and slabs bring $29, Youngstown and Cleveland.

Cleveland—Specifications for sheet bars, billets and slabs show little change from the recent rate, and prices hold at $29, base, Cleveland and Youngstown, O. The leading merchant producer here was to resume operation of five open hearths Wednesday, following suspension Friday July 3.

Chicago—Most of the regular semifinished buyers completed forward contracting before the start of third quarter. Contracts to larger users are based on $30, Chicago, for billets and blooms, 4 x 4-inch base. Forging billets are quoted $35 to $36, and sheet bars are unchanged at $30, Chicago.

Gets Steel Casting Award

Washington—Black Wire Rope Co., Peoria, Ill., has booked 3600 feet of wire rope at $1574 for the United States engineer, Vicksburg, Mass.

Structural Shapes

Awards Heavier But Are Sustained by 11,000-Ton Item—Pending Work High in West, Led by 25,000-Ton Chicago Post Office—Federal Work in West Booming

STRUCTURAL SHAPE PRICES, PAGE 59

New York—McClintic-Marshall was awarded the 11,000 tons in the New Jersey viaduct, Kearny, N. J., being low at $1,067,600. Mt. Vernon Bridge Co., Mt. Vernon, O., was second, the spread being close to $40,000. A fair-size tonnage of steel castings, pipe and miscellaneous steel is also covered by this contract. F. G. Schaefer Iron Works, Edgewater, is low on 1000 tons for a county building at Hackensack, N. J. State bridges continue to make up the bulk of fresh inquiry. A school at Warwick, N. Y., 1200 tons, is active. Prices are steady on plain material, although fabricated steel prices continue to spread broadly. A bridge at Peekskill, N. Y., 800 tons, went to McClintic-Marshall Corp.

Boston—Two pending contracts for 500 tons each, one for a war memorial building at Newton, Mass., and a state bridge, Bucksport, Maine, are up. Section B, traffic tunnel, bids July 15, will be built by the cut and cover method and will require no welded steel lining plates similar to the shield-driven sections recently let. Structural needs are 325 tons, other requirements being given under various market departments in this issue of STEEL.

Philadelphia — Following last week's fair activity, structural inquiry is light. Shapes are holding at 1.65c to 1.70c, nearest mill for carlots.

Pittsburgh—Structural shapes are quiet locally in both awards and inquiry. Specifications for plain material have declined moderately since a month ago. The market generally continues 1.65c, Pittsburgh.

Cleveland — Fabricators have closed nothing of size in the week but bids have been submitted for the Juvenile courts group which will take 900 to 1000 tons. The White City sewage plant and underground space for the city are in the offing. Mr. Vernon Bridge Co., Mt. Vernon, O., closed on 1100 tons for the four bridges at Buffalo. Plain material is quiet for third quarter coverage at 1.65c, Pittsburgh.

Chicago—Due largely to federal work, the position of structural mills is much improved. About 80,000 to 95,000 tons of structural work, including 45,000 tons for the Chicago postoffice is nearing the active stage. About 2100 tons additional will be purchased for the Indiana Bell Telephone Co. exchange, Indianapolis, and about 3000 to 4000 tons will be required for the South Bend, Ind., postoffice. Plain material contracts are being extended on the basis of 1.70c, Chicago.

Birmingham, Ala.—Bids are being prepared on considerable tonnages. Virginia Bridge & Iron Co. has contracts for bridges in California and Texas, aggregate 400 tons.

Contracts Placed

11,000 tons shapes, 310 tons steel castings, 5175 linear feet structural steel railing and 500 linear feet pipe railing, highway viaduct, route 25, connecting link, sections 4B-5, Kearny, N. J.; to McClintic-Marshall Corp., Bethlehem, Pa., at $1,067,600.

1500 tons, naval ammunition depot, Oahu, T. I., to unstated interest; general contract to Thomas Haverty Co., Los Angeles.

1500 tons, three cranes for Puget Sound navy yard, Wash., to Lakeside Bridge & Steel Co., Milwaukee, Wis.

1100 tons, viaducts, Buffalo, to Mt. Vernon Bridge Co., Mt. Vernon, O.

1000 tons, dormitory, Yale university, New Haven, Conn., to Pittsburgh Bridge & Iron Co., Rochester, Pa., through Marc Eidlitz & Son, contractor.

1000 tons, Bergen county court house, Hackensack, N. J., to F. G. Schaefer Iron Works, Edgewater, N. J.

900 tons, Metropolitan avenue, N. Y., bascule bridge over English Kills, Brooklyn, N. Y., to McClintic-Marshall Corp., Bethlehem, Pa., through E. O. Roberts Inc., contractor.

825 tons, bridge No. 1896, New York state, to McClintic-Marshall Corp., Bethlehem, Pa.

800 tons, public school No. 129, College Point, N. Y., to Easton Structural Steel Co., Easton, Pa.

800 tons, highway bridge, Peekskill, N. Y., state project, to McClintic-Marshall Corp., Bethlehem, Pa.; L. E. Myers general contractor.

760 tons, mill building, Trion, Ga., to McClintic-Marshall Corp., Bethlehem, Pa.

750 tons, addition to East Block, Toronto, Ont., for provincial government, to Canadian Bridge Co. Ltd., Walkerville, Ont.

745 tons, two buildings, Pennsylvania state college, Tyrone, Pa., to Bethlehem Construction Co., Bethlehem, Pa.

620 tons, bridge over Arkansas river, Tulsa, Okla., to Patterson Steel Co., Tulsa.

610 tons, McGiffert hall, Union Theological seminary, New York, to Bethlehem Fabricators Inc., Bethlehem, Pa., through Edward Corning Co., New York, general contractor.

500 tons, rebuilding B blast furnace, South Chicago, for Interlake Iron Corp., to John Mohr & Sons, Chicago.

500 tons, truss bridge, Milburn, N. Y., for Erie railroad, to American Bridge Co., Pittsburgh.

500 tons, viaduct, Oklahoma City, Okla., to Capital Iron & Steel Co., Oklahoma City, Okla.

450 tons, highway bridge, Bryan Junction, Tex., to Missouri Valley Bridge & Iron Works, Leavenworth, Kans.

400 tons, high school building, Quincy, Ill., to Rock Island Bridge & Iron Works, Rock Island, Ill.

400 tons, deck plate girder spans, Oklahoma, to Stupp Bros. Bridge & Iron Co., St. Louis, through Woods Bros. Construction Co., Lincoln, Nebr.

340 tons, plant and 200-foot craneway, H. E. Fletcher Co., West Chelmsford, Mass., to McClintic-Marshall Corp., Bethlehem, Pa.; Leo F. Caproni & Co., engineers and constructors, New Haven, Conn.

338 tons, Irem temple, Wilkes Barre, Pa. to Bethlehem Fabricators Inc., Bethlehem, Pa.

315 tons, high school, East Aurora, N. Y., to McClintic-Marshall Corp., Bethlehem, Pa.

308 tons, bascule bridge, New Jersey state highway commission, to McClintic-Marshall Corp., Bethlehem, Pa.

300 tons, grandstand, Indianapolis, Ind., to Central States Bridge Co., Indianapolis.

300 tons, work for Mississippi river barge to Dubuque Boat & Boiler Works, Dubuque, Iowa.

300 tons, 200 galvanized steel skeleton towers, department of commerce, airways division, for delivery mostly in south and southwest, to American Bridge Co., Pittsburgh; bids taken June 8.

300 tons, bridge, New York state letting June 9, to American Bridge Co., Pittsburgh.

265 tons, granite cutting shed, Chelmsford, Mass., to McClintic-Marshall Corp., Bethlehem, Pa.

265 tons, hangar extension, Squantum, Mass., to Belmont Iron Works, Philadelphia.

250 tons, bridge, Texas highway work, Callahan & Co., contractor, to Virginia Bridge & Iron Co., Roanoke, Va.

200 tons, motor room framing and electric control pulpits, Indiana Harbor works, Inland Steel Co., Chicago, to McClintic-Marshall Corp., Bethlehem, Pa.

200 tons, bridge, Maryland, Baltimore & Ohio railroad, to American Bridge Co., Pittsburgh.

200 tons, additional stories to Maurice L. Rothschild building, Chicago, to Duffin Iron Co., Chicago.

200 tons, court house, Portland, Me., to

Awards Compared

	Tons
Awards this week	**32,108**
Awards last week	**29,199**
Awards two weeks ago	**40,140**
Awards this week in 1930	**27,885**
Av. weekly awards, 1930	**35,242**
Av. weekly awards, 1931	**36,681**
Av. weekly awards, June	**38,076**
Total awards to date, 1930	**951,713**
Total awards to date, 1931	**1,063,754**

Bethlehem, Pa., through National Constrution Co., Washington, general contractor.

175 tons, bridge over Southern Pacific tracks, Burbank, Calif., to Virginia Bridge & Iron Co., Roanoke, Va.

150 tons, attendants' building, state hospital, Morris Plains, N. J., to Jersey Steel Co., Trenton, N. J.

150 tons, court house remodeling, Anniston, Ala., to Virginia Bridge & Iron Co., Roanoke, Va.

130 tons, fire station, Newark, N. J., to Selbach-Meyer Co., West New York, N. J.

125 tons, bridge at Dixon, Ill., for Chicago, North Western railroad, to American Bridge Co., Chicago.

115 tons, two bridge spans for Missouri highway commission, to St. Louis Structural Steel Co., East St. Louis, Ill.

115 tons, shapes and bars, post office, Rock Hill, S. C., to Salem Steel Co., Winston-Salem, N. C., and Southern General Fireproofing Co., Atlanta, Ga.; Batson-Cook, West Point, Ga., contractor.

100 tons, two 10-ton cranes for Ford Motor Co. assembly plant, Seattle, to Lakeside Bridge & Steel Co., Milwaukee, Wis.

100 tons, school addition, Salisbury, Md., to Acme Steel Engineering Co., Baltimore; Cogswell Construction Co., contractor.

100 tons, coal station, Kentucky, to St. Louis Structural Steel Co., East St. Louis, Ill.

100 tons, bridgework, Union Pacific railroad, Cheyenne, Wyo., to unstated.

Contracts Pending

45,000 tons, post office, Chicago; bids Aug. 10.

5100 tons, three bridges, Monroe, Alexandria and Marco, La.

4500 tons, health center, Grove & Polk streets, San Francisco; bids being taken.

2500 tons, federal building, Seattle.

2100 tons, additional, Indiana Bell Telephone Co. exchange, Indianapolis, Ind.

1300 tons, electrification work, Pennsylvania railroad; indefinitely postponed.

1200 tons, training school for boys, Warwick, N. Y.

1000 tons, plant building, Bellwood, Ill., for Jefferson Electric Co., Chicago; Regan Construction Co., Chicago, contractor.

550 tons, state bridges, Maine.

500 tons, Paramount theater, Lawrence, Mass.

500 tons, dormitory, Yale university, New Haven, Conn.

500 tons, war memorial building, Newton, Mass.

500 tons, state bridges, New York.

450 tons, bridgework for Chicago, Burlington & Quincy railroad.

400 tons, addition to Cook county, Ill., nurses' home.

400 tons, post office, Lafayette, Ind.

300 tons, state bridges, Massachusetts.

300 tons, state highway bridge, Vernon county, Wis.; bids close July 14.

225 tons, Delaware & Hudson bridge, Afton, N. Y.; bids in.

200 tons, approximately, roll storage building, Superior Paper Products Co., Carnegie, Pa.

130 tons, McCreech apartment, Philadelphia; revised bids asked.

125 tons, state bridge, Columbia county, Pa.; bids July 10.

100 tons, two bridges, Philadelphia & Western railroad, Philadelphia district.

100 tons, Art Alliance addition, Philadelphia.

100 tons, Reading railroad station, Chestnut Hill, Pa.; Barclay-White Contracting Co., Philadelphia, general contractor.

Unstated tonnage, Pennsylvania railroad; bids July 21.

Concrete Bars

Contracts Placed Almost Half Last Week's Total—Hawaiian Island Job Takes 1500 Tons—Fresh Inquiry Aggregates 9799 Tons—Prices Firmer at New York

REINFORCING BAR PRICES, PAGE 59

New York—Bar prices are firm with shading less evident. Highway work on the Bronx parkway extension accounts for 390 tons placed while fresh inquiry includes 501 tons for the same project, bids opening July 20 with the Westchester county park commission. Sewers for Queens on which bids are in will take 300 tons. A like tonnage is up for highway and bridge works for the Long Island state park commission.

Boston—One reinforcing contract was placed in the past week, amounting to 280 tons for a plant for the Whitehead Metal Products Co. There was 150 tons sold in small lots.

Philadelphia—Reinforcing bars are slightly stronger, tending toward 1.60c, Pittsburgh, minimum with local truck deliveries 2.05c to 2.15c.

Pittsburgh—Demand is steady but the local market is quiet in large lots. Approaches for the Ohio river bridge, Henderson, Ky., will require 758 tons of concrete bars, bids on which open July 15. The market continues 1.60c to 1.65c for stock lengths. The Koon dam project at Cumberland, Md., involving 300 tons, has been placed.

Cleveland—General contract has been placed on the Columbus road bridge but along with the Belvoir boulevard work, these two tonnages remain pending. Fresh work for figuring is lacking and only a few awards in small lots are going forward.

Chicago—Heavy reinforcing bar shipments against the numerous federal, industrial, road and bridge contracts have placed a few bar companies 30 days ahead, as compared with last year's volume. Minimum prices for billet bars are 1.80c, and rail steel, 1.50c, with the bridge and culvert 1.65c. It is expected the Rock Island-Moline, Ill., bridge will total about 1000 tons.

Awards Compared

	Tons
Awards this week	**5,135**
Awards last week	**9,072**
Awards two weeks ago	**6,670**
Awards this week in 1930	**3,543**
Av. weekly awards, 1930	**6,990**
Av. weekly awards, 1931	**6,794**
Av. weekly awards, June	**6,506**
Total awards to date, 1930	**196,977**
Total awards to date, 1931	**197,031**

Contracts Placed

1500 tons, naval ammunition depot, Oahu, T. H., to unstated interest; general contract to Thos. Haverty Co., Los Angeles.

600 tons, plant building for Western Electric Co., Twenty-sixth street and Cicero avenue, Chicago, to Ouilmette Construction Co., Chicago.

500 tons, Enoch Pratt memorial library, Baltimore, to Dietrich Bros., Baltimore.

400 tons, highway route 40, section 6, Buddtown Four-Mile road to Ocean county line, N. J., to Truscon Steel Co., Youngstown, O., through Edward H. Ellis Inc., contractor.

390 tons, highway, Bronx parkway extension, Highland avenue to Crompond road, Peekskill and Cortlandt, N. Y., Westchester county park commission, to Truscon Steel Co., Youngstown, O.

370 tons, bridge, Chicopee, Mass., to Kalman Steel Co., Chicago; Fred T. Ley & Co. Inc., Springfield, Mass., general contractors.

340 tons, Albro place viaduct, Seattle, to Pacific Coast Steel Corp., Seattle, through Western Construction Co., general contractor.

300 tons, Koon dam, Cumberland, Md., to Ft. Pitt Bridge Works Co., Pittsburgh, through Vang Construction Co., Pittsburgh, general contractor.

280 tons, Whitehead Metal Products Co., Cambridge, Mass., to Northern Steel Co., Boston.

150 tons, road work, Illinois, to Olney J. Dean Co., Chicago.

105 tons, foundation for standpipe, Lancaster, Pa., to E. T. Edwards, Columbia, Pa., through David Warfel, contractor.

100 tons, or more, sewage disposal plant, Allentown, Pa., to McClintic-Marshall Corp., Bethlehem, Pa.

100 tons, road work, Illinois, to Concrete Engineering Co., Pittsburgh.

Contracts Pending

5000 tons, post office, Chicago; Graham, Anderson, Probst & White, architects; bids Aug. 10.

(*Concluded on Page 67*)

Strip

Advance Generally Effective—Production Unchanged and Shipments Steady

STRIP PRICES, PAGE 59

Pittsburgh—Strip buyers generally have accepted the increase of $1 a ton on hot material with little protest and although specifications against higher-priced contracts so far are light the market nominally has been established at the higher levels. Hot strip now is 1.65c and 1.55c with cold-rolled strip continuing 2.15c to 2.25c. Shipments continue quiet, but show little change from the rate of recent weeks. Closing out on old contracts will continue shipments at former prices for several weeks. Mill operations remain around 25 to 30 per cent for hot mills and 20 to 25 for cold strip.

Philadelphia—Buying of steel strip is sluggish. Hot-rolled strip is quoted at 1.50c to 1.55c, Pittsburgh, for wide, and 1.60c to 1.65c for narrow. Cold rolled is nominally 2.15c, Pittsburgh.

Youngstown, O.—While no large tonnages of hot or cold-rolled strip are being moved, mills are operating better than expected this week, about 45 to 50 per cent of capacity in the case of the hot-rolled mills. Fairly satisfactory volume of new business is being taken on the new classification basis.

Cleveland—The figures of 1.55c and 1.65c, for hot-rolled wide and narrow strip, respectively, are being quoted on all new business. However, as June closed most consumers placed coverage for their needs at $1 lower. Consequently it may be several weeks before adequate test of the advance is actually provided. Nevertheless the advanced prices are well observed by all mills on whatever spot business has developed. Cold-rolled strip is 2.15c to 2.25c, Cleveland.

Operations at 1931 Low; 33-34 Per Cent This Week

Youngstown, O.—Steel output is off three points this week to 38 per cent. Loss was chiefly attributable to the 25 to 30 per cent rate over the Independence day shutdown. Operations at Youngstown Sheet & Tube Co.'s Campbell plant are above 50 per cent but the Brier hill plant is nearly idle and the average for its plants in the valley is below 40 per cent. Carnegie Steel operations here are at 35 per cent, unchanged from last week. Republic Steel activity was sharply reduced over the holiday at Warren and Youngstown but returned to a 45 per cent level July 7.

Sharon Steel Hoop Co. operations are at 50 per cent for another week with the ingot production at Lowellville more than half the plant's rated capacity. Four sheet plants in the district, of which three are owned by Empire Steel Corp., are continuing idle.

Philadelphia—Eastern ingot operations are off a fraction of a point this week to 32-33 per cent.

Chicago—After almost complete shutdowns for the Fourth of July, ingot production resumed the first of the week at about 30 per cent, or on virtually the same basis as before the holiday. A few finishing mill operations did not get under way until late Monday. Ten of the district's 36 steelworks furnaces are active.

	Per Cent
Operations this week	33-34
Operations last week	34-35
Operations two weeks ago	36-37
Operations this week, 1930	60
High for 1931, (March 19)	57
Low for 1931, (July 9)	33-34

Buffalo—Steel production is off three points this week to 37 per cent capacity, the change due largely to slow resumption of open hearth activity after a Fourth of July shut down in one plant. Fourteen furnaces are active this week.

Pittsburgh—Ingot output is down over a point this week, being 34 to 35 per cent. Blast furnace operations are down two to 14 active stacks of the 54 in the district. Finishing mill schedules are unchanged with tin plate at 65, sheets at 35, strip at 25 to 30 and pipe 35 to 40 per cent.

Cleveland—Ingot production has dropped 6 points to an approximate 35 per cent capacity. Bourne-Fuller division, Republic Steel Corp., has closed its open hearths indefinitely, all of Corrigan-McKinney's were down until July 9 when five resumed. By the end of the week 12 of 34 open-hearths were on, at the lowest since November 11, 1930.

Birmingham, Ala.—Ingot production is down five points to 40 per cent capacity, some recession due to holidays. Preparations are under way to repair open hearths during summer.

Warehouse Sheet Prices Being Generally Revised

Warehouse Prices, Page 81

New York—Most jobbers are putting into effect new price ranges on galvanized and black sheets in line with mill classifications. June volume with most warehouses was up to the previous month. Outside a lull due to the holiday there has been little evidence of the usual summer slow up.

Boston—Discounts on carriage machine bolts, and lag screws are 65 and 5 off against 60 and 5 recently; nuts are now 40 and 10 off against 40 off. Wire nails have been cut 15 cents, now being 2.85 per keg, base.

Philadelphia—One large jobber has reduced bolts and nuts to 65 and 10 off compared with 60 and 10 previously. Jobbers believe the low point in demand has been reached.

Jobbers have adopted new sheet classifications. Under the new arrangement No. 10 gage has been adopted as the only base on hot rolled blue annealed. No. 24 gage black sheets are listed as No. 24 hot rolled annealed.

Baltimore—Jobbers have not yet generally adopted the new sheet classifications. Trading is dull.

Pittsburgh—Sales hold to their recent quiet rate. Sellers have changed the nomenclature of sheets in conformance with the mills, but base prices are unchanged.

Cleveland—Steel warehouse interests hold little hope of any gain in demand during July. Jobbers have no difficulty in obtaining quoted figures.

Detroit—Due to the past week's holiday inroads, many plants closed for a long week end. Movement of steel goods from stock has been consequently quiet and unchanged.

Cincinnati—Jobbers here report a slight improvement in June tonnage, due partly to demand for steel bars. Quotations are unchanged.

Chicago—June warehouse sales fell sharply from May, but most of the loss is ascribed to ordinary seasonal influences. While warehouses have reduced bolts and nuts 10 per cent, rivets remain unchanged.

St. Louis—Summer quietness prevails in steel warehouse business. With most interests, however, June turned out better than anticipated. Highway construction materials are in better demand.

Concrete Bars Pending

(*Concluded from Page 63*)

1200 tons, ad ition to Cook county, Ill., nurses' home.

758 tons, approaches to Ohio river bridge, Henderson, Ky.; bids open July 15.

501 tons, highway, Bronx Parkway extension, Croton Lake to Crompton road, Yorktown, Westchester county, N. Y. Westchester county park commission, Jay Downer, chief engineer; bids July 20.

500 tons, federal prison, Anthony, N. Mex.; bids opened.

368 tons, road work, Louisiana highway commission; bids July 14.

300 tons, sewers, Queens, N. Y.; general contract bids in.

300 tons, highways and bridges, Long Island state park commission; Municipal Construction Co., Binghamton, N. Y., and Smith Bros., Pelham, N. Y., general contractors.

300 tons, federal post offices and additions, Illinois.

300 tons, billet steel, Columbus road bridge, Cleveland; Lowensohn Construction Co., contractor.

286 tons, wharf and shed, navigation district, Harrison county, Texas; J. F. Harrison Construction Co., contractor.

250 tons, post office, Louisville, Ky.; general contract to Pike & Cope, Minneapolis, Minn.

250 tons bars, 12,000 square feet wire cloth, section B, traffic tunnel, Boston; bids July 15, transit department, 1 Beacon street; Ernest R. Springer, chief engineer.

126 tons, Congressional apartments, Methodist Board for Prohibition, Temperance and Public Morals, Washington, D. C.; Charles H. Tompkins Co., Washington, contractor, taking bids.

110 tons, upper Alameda creek dam for San Francisco; bids July 15.

100 tons, bridge over Coyote creek, Santa Clara county, Calif.; bids opened.

Unstated tonnage, 3000 sheets steel fabric reinforcing wire, district commissioners, Washington; American Steel & Wire Co., Chicago, low with $1.29.

Unstated tonnage, building for *Times Star* Publishing Co., Cincinnati, to include 19-floor tower.

Unstated tonnage, building, Bellwood, Ill., for Jefferson Electric Co., Chicago.

Charges Bureaucracy Delays Government Work

New York—Economic recovery is being held up by an "architectural bureaucracy" in Washington, George H. Gray, New Haven, Conn., director of the American Institute of Architects for the New England division, charges in a statement made public here.

"Pent up power for relief from the business depression lies in the treasury of the United States in the form of appropriations for $500,000,000 worth of buildings, which will not be used in volume, according to the present schedule, until the emergency is passed," Mr. Gray declared.

"This situation has arisen despite the fact congress in appropriating this money sought to aid in reducing unemployment.

"The cause of the delay is bureaucracy, the taking over by the government of functions best performed in the communities where the buildings are to be built. The government has built up a huge architectural office but it is estimated the government cannot catch up until 1937."

Auto Plate Sheets Let

New York — Weirton Steel Co., Weirton, W. Va., has been awarded the contract for 40,000 steel sheets, 13 x 61 inches, 22 gage, at $2.815 per hundred pounds. Sheets are for auto plate requirements.

Bid Panama Steel Needs

New York—E. H. Edwards Co., San Francisco, is low on 18,000 feet wire rope for Panama on a bid of $1443.48. Figures went in last week on considerable other material which included 22,000 pounds soft steel wire, United States Products Co., New York, being low with $708.75.

Youngstown Sheet & Tube Co., Youngstown, O., is low on 50,000 feet rigid steel conduit on a bid of $2650. Jones & Laughlin Steel Corp., Pittsburgh, is low with $1482.50 on common wire nails.

Low on Ordnance Forgings

Washington—Erie Forge Co., Erie, Pa., is low on 24 8-inch 55-gun forgings for the ordnance bureau, navy department, with a bid of 25c a pound. On 30 5-inch gun forgings, National Forge & Ordnance Co., Irvine, Pa., is low at 12.7c a pound, complete in 180 days.

Lighthouse Chain Placed

New York—United States Chain & Forging Co., McKees Rocks, Pa., has been awarded 144 units 15-fathom pieces open link chain and 58 pieces bridle chain for the lighthouse bureau, Staten Island, N. Y., on a bid of $7488.25.

Standard Is Renewed

Washington—The simplified practice recommendation on eaves trough, conductor pipes, conductor elbows and fittings has been extended for six months without change, according to the department of commerce.

Pipe

Lycoming Line, 19,500 Tons, Placed—5000 Tons Cast Up for French Refinery

PIPE PRICES, PAGE 81

New York—Cast pipe lettings total approximately 4000 tons, including 1300 tons for Queens and 1200 tons for Ticonderoga, N. Y. Bids are in on about 5000 tons for a refinery in France for the Standard Oil Co. of New Jersey. Prices continue weak. For Wards Island sewerage disposal plant close to 3700 tons still pends.

Pittsburgh—Lycoming Natural Gas Co. has placed 19,500 tons of 20-inch seamless and lapweld pipe with the National Tube Co. and Spang, Chalfant & Co. Inc. This line is among the last of the more active projects recently pending. Standard pipe remains slow with little change noted from activity of a month ago while, with the exception of the east Texas field, most oil centers are quiet buyers of oil country goods.

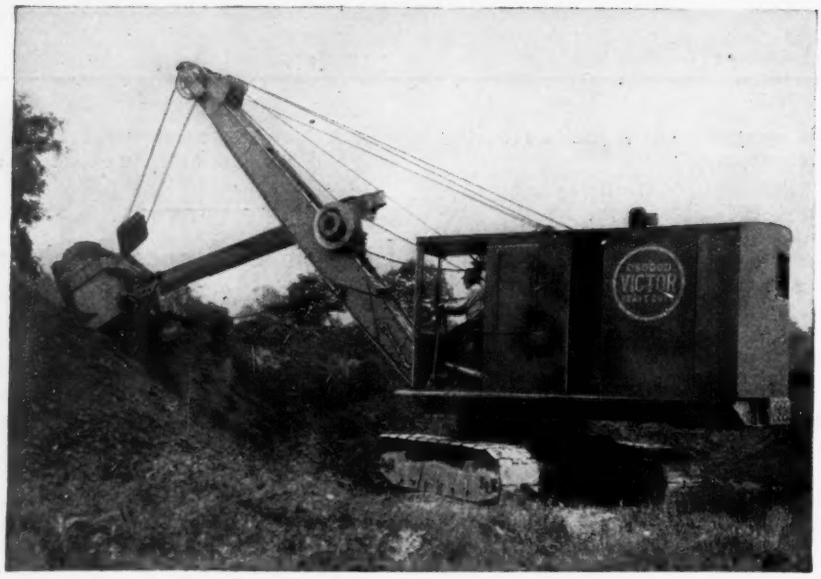
Chicago—Indications are that much of the contemplated Chicago and Detroit pressure pipe purchases for this season may be postponed. Chicago was expected to buy about 25,000 tons, but finally may not close for more than half of that amount. Chicago delivered prices for the small sizes are based on $35 to $36, Birmingham, in contract orders.

Boston—About 1000 tons were contracted for in the past week for the New England section but only 250 tons are pending. Hanover, N. H., placed 900 tons of 16-inch. At present $32 a ton f.o.b. foundry is the general asking price.

Youngstown, O.—No large linepipe orders have been booked since Sheet & Tube took 41,000 tons of electrically-welded tubes, yet both it and the Republic Steel Corp.'s electric-welded mills are in steady operation. Considerable butt-welded pipe tonnage also has come out in the past week.

Cleveland—The 2500 tons of steel pipe for the Belvoir boulevard development is still awaiting award. Barberton, O., is buying approximately 700 tons of steel pipe for municipal work.

Birmingham, Ala.—Quotations are unchanged, though some concessions



The "Osgood Victor", built by The Osgood Company of Marion, Ohio, and equipped with Vanadium Steel shafting, can be rigged as a shovel, crane, clamshell or dragline without any changes in operating machinery.

VANCORAM

FERRO-ALLOYS of vanadium, silicon, chromium and titanium; silico-manganese, tungsten and molybdenum, produced by the Vanadium Corporation of America, are used by steel makers in the production of high-quality steels.

Tough Service Calls for Tough Steels

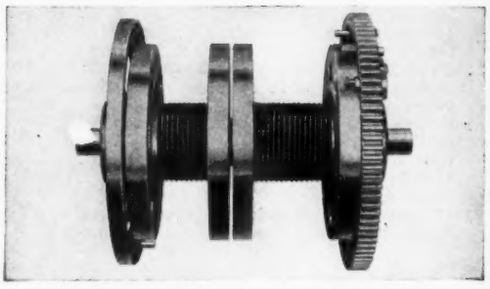
Vanadium Forgings Meet Requirements

PACKED into a day in the life of a power shovel is more abuse than many types of machinery or equipment encounter in a year. Nobody pampers a power shovel.

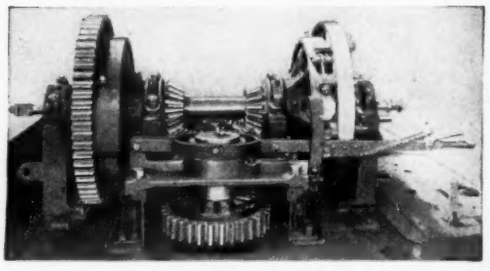
In power shovel operation, shafting particularly is subject to excessive vibration, shock and strain. Abuse in severe service often causes springing or bending of carbon steel shafts, with failure an inevitable result.

In main drive shafts, reversing shafts and cross travel shafts of all Osgood machines, The Osgood Company of Marion, Ohio, employs tough, strong, enduring forgings of Vanadium Steel. Springing, bending and failures have been eliminated.

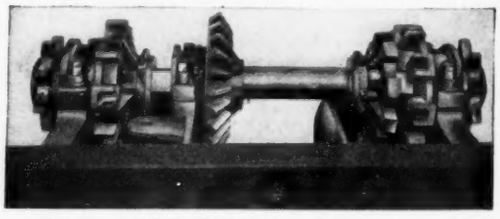
Would stronger, tougher, more durable steels improve the performance of your products and safeguard their operation and reputation? Our Metallurgists will gladly suggest analyses of Vanadium Steels that will meet your most exacting requirements. Write us today.



Drum shaft assembly of the "Osgood Victor". The drum shaft is forged of Vanadium Steel.



Reversing shaft assembly of the "Osgood Victor". Here, also, the shaft is a Vanadium Steel forging.



Cross travel shaft of the "Osgood Victor", forged of Vanadium Steel. Two driving sprockets, two clutches and a bevel gear are mounted on the shaft.

VANADIUM CORPORATION OF AMERICA
120 BROADWAY, NEW YORK, N. Y.

CHICAGO	PITTSBURGH	DETROIT
Straus Bldg.	*Oliver Bldg.*	*Book Tower*

Plants at Bridgeville, Pa., and Niagara Falls, N. Y.
Research and Development Laboratories at Bridgeville, Pa.

VANADIUM STEELS

for strength, toughness and durability

are reported. Bids are in on several thousand tons to be distributed within the next 10 days.

Cast Pipe Placed

1300 tons, 20-inch, Queens, N. Y., to United States Pipe & Foundry Co., East Burlington, N. J.

1200 tons, 10 to 14-inch, for Ticonderoga, N. Y., to R. D. Wood & Co., Florence, N. J.

900 tons, 16-inch, Hanover, N. H., to Warren Foundry & Pipe Co., Phillipsburg, N. J.

810 tons, 20-inch class 250, San Bernardino, Calif., to American Cast Iron Pipe Co., Birmingham, Ala.

750 tons, up to 10-inch, for Inlet, N. Y., to R. D. Wood & Co., Florence, N. J.

500 tons, various sizes, Morgantown, W. Va., to American Cast Iron Pipe Co., Birmingham, Ala.

300 tons, various sizes, Clay, Ky., to American Cast Iron Pipe Co., Birmingham, Ala.

230 tons, miscellaneous sizes, sewage treatment works, Highland Park, Lake Forest and North Chicago, Ill., awarded through contractor.

185 tons, small sizes, for Panama canal, to American Cast Iron Pipe Co., Birmingham, Ala.

100 tons, 12-inch, Rockport, Mass., to Warren Foundry & Pipe Co., Phillipsburg, N. J.

100 tons, 6-inch class 150, for United States Indian hospital, Tacoma, Wash., to United States Cast Iron Pipe Co., Burlington, N. J., and American Cast Iron Pipe Co., Birmingham, Ala.

Steel Pipe Placed

19,500 tons, 110 miles, 20-inch seamless and lapweld steel pipe for Lycoming Natural Gas Co. line from Tioga county, Pa., to Syracuse, N. Y., to National Tube Co. and Spang, Chalfant & Co. Inc., Pittsburgh.

2000 tons, steel pipe, further auxiliary work, Montana, for Phoenix Utilities Corp., to Jones & Laughlin Steel Corp., Pittsburgh; A. O. Smith Corp., Milwaukee; and Republic Steel Corp., Youngstown, O.

Cast Pipe Pending

5000 tons, various sizes, refinery in France, for Standard Oil Co. of New Jersey; bids in.

2096 tons, 4 to 12-inch class B, San Francisco; bids opened.

200 tons, 6 and 8-inch, for Hammond, Ind.; former bids rejected and project to be readvertised.

150 tons, mixed sizes, Nashua, N. H.; bids closed, no award.

100 tons, 6 and 8-inch, West Springfield, Mass.; bids closed, no award.

Steel Pipe Pending

5325 feet, ¾ to 3½-inch steel conduit pipe, section B, traffic tunnel, Boston; bids July 15, transit department, 1 Beacon street; Ernest R. Springer, chief engineer. Work also includes some special steel plates and iron air flues.

5000 tons, 42 and 52-inch, steel pipe with concrete alternate, Passaic Valley water commission, Paterson, N. J.; New Jersey Lock Joint-Concrete Pipe Co., Ampere, N. J., only bidder; bids opened July 7.

700 tons, municipal work, Barberton, O.

Wire

Dull Conditions Prevail with Manufacturers' Wire in Best Demand—Prices Are Untested

WIRE PRICES, PAGE 59

Chicago—Wire products sales are slow, but a number of contracts are being carried over into third quarter at $1.85, Chicago or western mills, for wire nails to jobbers, and 2.25c for plain wire. Price tests are lacking. Production, which was down over the week-end, is being resumed partially. Crop yield reports are decidedly favorable, and late August business is expected despite low farm prices. Several midwest utility programs for autumn encourage the steel electrical wire market. Wire mesh sales are active.

Worcester, Mass. — Little change has taken place in the market for wire and nails and conditions and prices are much as for several weeks.

Pittsburgh—Wire demand continues quiet and buyers show little interest in new contracts. Prices are unchanged at $1.80 to jobbers for wire nails and 2.20c for plain wire but lack strength at these levels. Wire rods are $35. Absence of price advances for the new quarter provided no incentive to buyers to order ahead and specifications reflect immediate requirements. Shipments are lighter than a month ago.

Youngstown, O. — While wire nail mills in this district appear to be operating at about half capacity, as in many months in the past, yet wire tonnage moving from local mills is better this month than in June. Largely this tonnage is composed of manufacturers' wire, demand for which continues to hold level with recent satisfactory months as to shipments. Wire nails bring $1.80 to $1.90 per 100-pound keg in carloads to jobbers, and bright plain wire is 2.20c for Nos. 6 to 9 gage.

Cleveland—Sales of wire are dull and featureless with third quarter contracting in a decided lull and manifesting no signs of being closed. State highway lettings have improved the concrete mesh situation but generally the needs of manufacturing plants for plain wire and jobbers and the general trade for nails have continued restricted. Dirigible dock fencing at Akron, O., is still pending. Prices are steady at $1.80 and $1.90 for nails to jobbers and the trade, respectively, and 2.20c, Pittsburgh, for plain wire.

May output was 43,799 range boilers, down from April's total of 48,250 units, according to the department of commerce.

Bolt, Nut, Rivet Users Cover for Third Quarter

Bolts, Nuts, Rivets Prices, Page 50

Pittsburgh — Third quarter contracting in bolts, nuts and rivets is practically complete. Prices of bolts and nuts have been revised to 73 and 10 off while rivets, which have been relatively firmer, are unchanged at 2.75c, Pittsburgh, for structural rivets. Specifications continue quiet but are little changed from the rate of recent weeks, with orders limited to small lots for early needs.

Chicago—While much bolt, nut and rivet capacity in this district will be down for at least another week, skeleton forces are maintained to get out urgent orders. Accumulations of shipping orders assure resumption at about 35 to 40 per cent later this month. Large structural rivets are quoted at 2.85c, Chicago, carloads, and small rivet discounts are 70, 10 and 5 off, despite the recent reduction of 10 per cent in bolts and nuts. A further reduction in stove bolts, making the discount 85, 10 and 5 off, have occurred. Several urgent automotive orders have appeared in the last few days.

Carbon, Alloy Steel Booked

New York—American Tube & Stamping Co., Bridgeport, Conn., has been awarded 20,000 pounds carbon steel SAE 1025, half being 0.065 inch thick and half 0.250 inch. The bids were 3.975c and 3.475c, respectively. Republic Steel Corp., Youngstown, O., booked 10,000 pounds chrome molybdenum steel at 8.386c. Material is for naval aircraft plant, Philadelphia.

Conductor Cable Is Let

New York—Packard Electric Co., Warren, O., has been awarded 60,000 feet electric single-conductor cable for the naval aircraft factory, Philadelphia, on bids of $3.96 and $4.23 per thousand feet. American Brass Co., Waterbury, Conn., on a bid of 16.5c, was awarded 600 pounds of naval rolled sheet brass.

Raw Material Prices

Pig Iron

Per Gross Ton

FOUNDRY, No. 2

Chicago furnace	$17.50
Pittsburgh, dist. fur.	17.50
Pittsburgh, delivered	18.13 to 18.63
Valley furnace	17.00
Cleveland fur., local del.	17.00
Philadelphia, delivered	17.26
Virginia, furnace	17.75
Granite City, Ill., fur.	17.50
Buffalo, fur., local del.	17.00
Buffalo, del. Boston	21.41 to 21.91
Buff., all-rail, Brooklyn	19.91 to 20.91
Buff., all-rail Newark	18.28 to 18.78
Ala., Bir. fur., local del.	12.00 to 13.00
Alabama, del. Chicago	17.01
Alabama, del. St. Louis	15.42
Alabama, del. Cincinnati	14.69 to 15.19
Ala., Phila., dock del.	16.25
Ala., Balt., dock del.	16.00
Alabama, New York dock	16.50
Ala., Boston dock del.	16.75
Tenn., Bir. base, local del.	13.00
Tennessee, del. Cinn.	14.69 to 15.19
Montreal, delivered	23.50
Toronto, delivered	22.10

FOUNDRY, NO. 2X

Buffalo, fur., local del.	17.50
Buff., all-rail, Brooklyn	20.91 to 21.41
Buffalo, all-rail Newark	18.78 to 19.28
Buffalo, del. Boston	21.91 to 22.41
Virginia furnace	18.25
Eastern, del. Phila.	17.76

FOUNDRY, NO. 1X

Buffalo fur., local del.	18.50
Eastern, del. Phila.	18.26

MALLEABLE

Valley furnace	17.00
Cleveland fur., local del.	17.00
Pittsburgh dist. fur.	17.50
Pittsburgh, delivered	18.13 to 18.63
Chicago, furnace	17.50
Buffalo fur., local del.	17.50
Eastern Penna., delivered	18.26 to 20.91
Granite City, Ill., fur.	17.50
Montreal, delivered	24.00
Toronto, delivered	22.60

BASIC

Pittsburgh, district fur.	16.00 to 16.50
Pittsburgh, delivered	16.63 to 17.63
Eastern Penn., del.	17.00
Buffalo fur., local del.	16.50 to 17.00
Montreal, delivered	20.50
Valley, furnace	17.00

BESSEMER

Valley furnace	17.00
Pittsburgh, delivered	18.13 to 18.63
Pittsburgh, furnace	17.50

LOW PHOS.

Valley fur., standard	27.00
Philadelphia, standard	23.76 to 26.79
Copper-bear., E. Pa. fur.	22.50 to 23.00

GRAY FORGE

Valley furnace	16.50
Pittsburgh district fur.	17.00
Pittsburgh, delivered	17.63 to 18.13

CHARCOAL

Lake Superior, del. Chi.	27.04

SILVERY

Jackson County, O., fur., in per cents 6—$21; 7—$21.50; 8—$22; 9—$22.50; 10—$23; 11—$24; 12—$25; 13—$27.

BESSEMER FERROSILICON

Jackson County, O., fur., in per cents 10—$25; 11—$26; 12—$27; 13—$29; 14—$31; 15—$26; 16—$35.

Coke

Prices Per Net Tons

Beehive Ovens

Connellsville furnace	$2.40 to 2.50
Connellsville foundry	3.25 to 4.50
New River foundry	6.00
Wise county foundry	4.25 to 5.00
Wise county furnace	3.50 to 4.25

By-Product Foundry

Newark, N. J., del.	8.70 to 9.10
Chicago, ovens	7.50
New England, del.	10.50
St. Louis, del.	8.50
Birmingham, ovens	5.00
Indianapolis, del.	8.25
Ashland, Ky., ovens, Connell., basis	5.50
Portsmouth, O., ovens, Connell., basis	5.50
Buffalo, ovens	8.00 to 8.50
Detroit, ovens	8.00
Philadelphia, del.	8.75

Iron Ore

LAKE SUPERIOR ORE

Gross ton, 51½%, Lower Lake Ports	
Old range bessemer	$4.80
Mesabi bessemer	4.65
Old range nonbessemer	4.65
Mesabi nonbessemer	4.50
High phosphorus	4.40

EASTERN LOCAL ORES

Cents per unit delivered at Eastern Pennsylvania and New Jersey furnaces

Foundry and basic, 56-63%, contract	10.00
Copper-free low phos. 58-65%	nom.

FOREIGN ORE

Cents per units, alongside docks Atlantic ports

Foreign manganiferous ore, 45-55% iron, 6-10% manganese	10.00
North African low phosphorus	8.50
Swedish basic, 65%	9.00
Swedish low phos.	10.00
Spanish, North African basic, 50 to 60%	8.50 to 9.00
Newfoundland fdy., 55%	8.50
Tungsten, spot and future short ton unit, duty paid	$11.25 to $11.50
Chrome ore, 48% net ton c.i.f.	$21.50 to 22.00

Manganese Ore

Prices, not including duty, are cents per unit; cargo lots.

Caucasian, 52-55% (nom.)	26 to 28 cents
South African, 52%	26 to 28 cents
South African, 49-51%	25 to 26 cents
South African, 44-47%	24 cents
Indian, 48-50%	nom.
Brazilian, 46-48% (nom.)	22 cents

Refractories

FIRE CLAY BRICK

Per 1000 f.o.b. Works

First Quality

Pennsylvania, Ohio, Illinois, Kentucky, Missouri, Maryland	$40.00
Georgia, Alabama	40.00

Second Quality

Pennsylvania, Ohio, Illinois, Kentucky, Missouri, Maryland	35.00
Georgia, Alabama	30.00 to 35.00

SILICA BRICK

Pennsylvania	40.00
Joliet, Ill., East Chicago, Ind.	49.00
Birmingham, Ala.	50.00

MAGNESITE BRICK

Per Net Ton

9 x 4½ x 2½	$65.00

MAGNESITE

Dead burned grain, net ton, Chester, Pa., or Baltimore bases	40.00
Domes, Chewelah, Wash., base	22.00

CHROME BRICK

Net ton, Chester, Pa., and Baltimore base, 9 x 4½ x 2½	45.00

Semifinished Steel

PRICES PER GROSS TON

BILLETS AND BLOOMS

4 x 4-inch base

Pittsburgh, open-hearth	$29.00 to 30.00
Pittsburgh, bessemer	29.00 to 30.00
Youngstown	29.00
Cleveland	29.00
Philadelphia	34.30
Chicago	30.00
Forging, Chicago	35.00 to 36.00
Forging, Pittsburgh	35.00 to 36.00
Forging, Philadelphia	40.30

SHEET BARS

Pittsburgh	29.00
Youngstown	29.00
Cleveland	29.00
Chicago	30.00

SLABS

Pittsburgh	29.00 to 30.00
Youngstown	29.00
Cleveland	29.00

WIRE RODS

Pittsburgh, Cleveland	35.00
Chicago	36.00

SKELP

All grades, Pittsburgh	1.60c

Ferroalloys

(In dollars, except Ferrochrome)

*Ferromanganese, 78-82%, tidewater, duty paid	$85.00
*Ferromanganese, del. Pittsburgh	89.79
Spiegeleisen, 19-20%, domestic fur. spot†	30.00
Ferrosilicon, 50 per cent, freight all., c. l.	83.50
Do, less carload	88.50
Do, 75 per cent	130.00 to 150.00
Ferrochrome, 66-70 chromium, 4-6 carbon, cts. lb., con., del.	11.00
Do, for spot delivery	11.50
Ferrotungsten, stand., lb. cont.	1.00 to 1.10
Ferrovanadium, 30-40 per cent, per lb., contained, on analysis	3.15 to 3.65
Ferro-carbon-titanium carload producers' plants, net ton	150.00
Do, one-ton to c. l.	170.00
Ferrophosphorus, per ton, carload 17-19 per cent, Rockdale, Tenn., basis (18 per cent)	91.00
Ferrophosphorus, electrolytic per ton carload, 23-25% f.o.b. Anniston, Ala., 24%	122.50

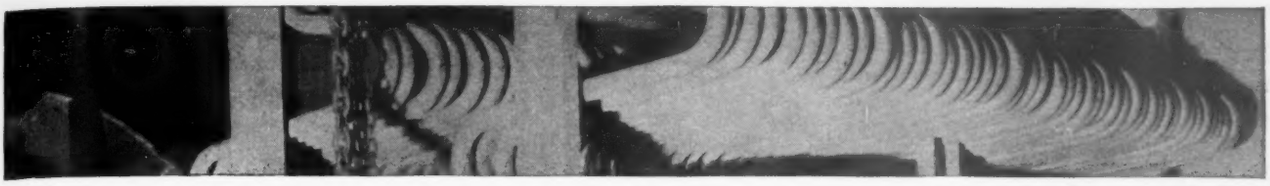
†Carloads. Differentials apply to large quantities.

*To users of carloads to 500 tons annually. Differentials apply to users of larger quantities.

Fluorspar

85 and 5 per cent grade

Washed gravel Kentucky and Illinois mines, per net ton	$13.50 to 14.00
Washed gravel, import duty paid east, tide, gross ton	18.50 to 19.00



THE RIGHT PIPE FOR BENDS

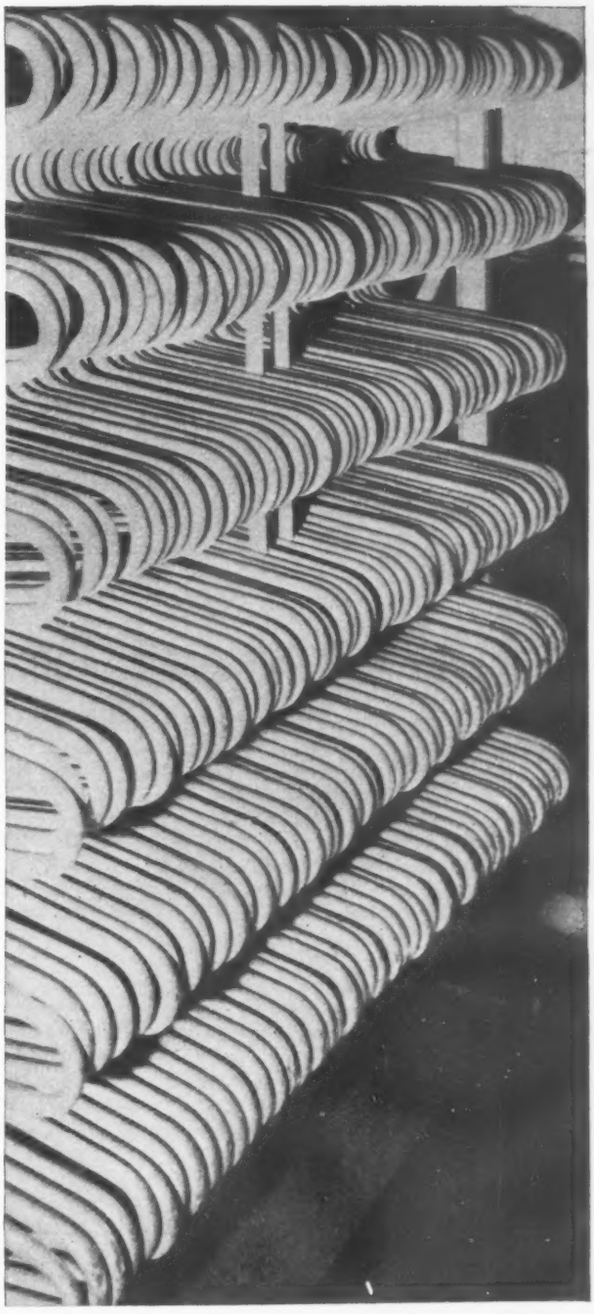
Necessary manipulation at the time when the system is installed, strains imposed directly by the particular use to which it is put, or the trying effect of sudden changes in operating conditions need cause little apprehension if the pipe used has been specially selected for bending purposes.

Extraordinary ductility and high tensile strength are provided in the character of the steel that goes into NATIONAL Pipe for this service. Equally important is the exceptional uniformity of structure that is assured by special manufacturing processes.

Whether for new plants, extensions or replacements you may be sure that the NATIONAL Pipe you install represents the utmost of skill and care in manufacture, in choice of material, and in inspection, to give unfailing service. Behind it are the resources of the largest manufacturer of tubular products in the world. The approval of leading engineers, based on knowledge, has made it—

America's Standard Wrought Pipe for Bending and Forming Purposes

NATIONAL TUBE COMPANY · Pittsburgh, Pa.
Subsidiary of United States Steel Corporation



NATIONAL PIPE

Pig Iron

Sales and Inquiries Improve in Some Lake Districts—Shipments Slow—Basic Sold in East

PIG IRON PRICES, PAGE 70

Pittsburgh—New pig iron business shows no improvement, sales still being comprised of scattered carloads. Foundry operations are declining, while the increased use of scrap is exerting an additional influence on pig iron consumption. The market is quiet in respect to inquiry. Prices are unchanged at $17, base, valley, for No. 2 foundry, malleable, basic and bessemer.

Boston—There was a slight pick up in sales of pig iron during the past week. Three hundred and fifty tons of Indian iron also was sold. It is reported the Mystic Iron Works will blow out its furnace at Everett, Mass., this week.

New York—The Thatcher Furnace Co., Garwood, N. J., has placed 3000 tons, divided among eastern Pennsylvania and Buffalo furnaces, with the reported price under $16.75, delivered. The $15, furnace, on Buffalo iron has been shaded in several instances, with waiving of silicon differentials. Southern iron appears fairly steady at $11, furnace, or $16.50, delivered New York docks. The Worthington Pump & Machine Corp., recently noted as closing on 100 tons for Holyoke, Mass., is figuring on a carload of foundry iron for the same plant.

Philadelphia—An order for 5000 tons of basic has been divided by a Claymont, Del., consumer among domestic sellers. The general volume of foundry iron sales is slightly better than a week ago. The Baltimore & Ohio is closing on approximately 100 tons of charcoal iron and high manganese iron, and the Southern railroad is buying 50 to 100 tons of No. IX. The Panama canal commission will open bids July 13 on 50 tons of No. 2 plain. Prices are unchanged.

Buffalo—Another blast furnace is scheduled to go into production July 8 at the Lackawanna plant of the Bethlehem Steel Co., increasing the number of stacks in operation in the district to five. This is the second addition to the number of active stacks in the district in the past ten days. Inquiry is fair but buying has declined following late June and early July covering.

Cleveland—Demand for pig iron has improved. Furnaces interests with headquarters at Cleveland booked approximately 15,000 tons in the past week. One merchant furnace company booked an order for 3000 tons covering one consumer's requirements for third quarter. A few sales have been closed for delivery through the last half at prices now prevailing. Consumers' stocks are low. Prospects of a freight rate increase and its influence on prices have had some effect, though this now is discounted by the commerce commission's hearings from which it is believed no decision will be reached until fall. Prices are steady at $17, base, furnace, for delivery in the Cleveland district; $16 to $17, base, furnace, in competitive territory in Ohio and Indiana, and $17 to $17.50 in Michigan.

Youngstown, O.—Pig iron buyers continue conservative. Purchases vary from 50 to 100-ton lots of No. 2 foundry, malleable and basic. All three grades, and bessemer, bring $17, valley furnace.

Cincinnati—Sales of pig iron in this district touched a new low level during the past week. Shipments also are light. Little southern iron is being sold but quotations remain firm.

Chicago — With many foundries down for the first half or all of July pig iron shipments this month are expected to be extremely light. Daily sales averages are moderately higher than the last week in June. Only few buyers are ordering ahead. Furnaces are carrying large stocks, while it is estimated the average of stocks at Chicago district foundries is not over 75 tons. All implement works have suspended shipments for at least 60 days. Prices continue at $17.50, base, Chicago furnace, although occasional low offers have been noted. A steelworks blast furnace has been blown out at Gary, leaving nine active out of 36 units in the district.

St. Louis—Heat and the holidays combined to reduce activities in pig iron during the past week. Unusually high temperatures for a considerable period caused temporary closing of some plants. Midyear inventories were another contributing cause to the lull.

Birmingham, Ala.—Contracting for third quarter is practically at a standstill, melters knowing they can get iron promptly when they need it. Prices are steady.

Toronto, Ont.—New business was dull during the week and sales dropped to the lowest record for the year. Few melters have placed future delivery contracts and only for about six weeks ahead. Prices are unchanged.

Ferroalloys Quiet; Ford Inquiries Are Pending

Ferroalloy Prices, Page 70

New York—Inquiries of the Ford Motor Co. for 500 tons of ferromanganese and 600 tons of ferrosilicon, 14 to 16 per cent, continue pending, with the ferroalloys market here generally quiet. Ferromanganese is nominally unchanged at $85, duty paid. Domestic spiegeleisen, 19 to 21 per cent, is holding at $30, furnace. Foreign spiegeleisen, 26 to 28 per cent, is nominal.

Special ferroalloys such as chrome and vanadium remain unchanged. Shipments are light and can be had quickly out of stock. The tungsten market is dull and unchanged.

Pittsburgh—Activity in ferroalloys has declined to a low ebb with shipments of ferromanganese, spiegeleisen and special ferroalloys affected by the further decline in steel plant operations. Price are unchanged, ferromanganese continuing $89.70 delivered and spiegeleisen $30, furnace.

Navy Buys Tubing, Hoists

New York—American Brass Co., Waterbury, Conn., was low on admiralty metal condenser tubes for navy department, eastern yards, Mare Island, Puget Sound, and f.o.b. works with bids of $16,824.82, $28,194.35 and $26,574.75 respectively. Bids were opened June 23.

Globe Steel Tubes Co., Milwaukee, is low on steel boiler tube requirements for eastern yards with a bid of $2148.38 and on western yard needs with $8802.46.

Silent Hoist Winch & Crane Co., Brooklyn, N. Y., was low on four electric hoists and brakes with controls and spares for Portsmouth, N. H., with bids of $5510 and $4702.

Steel Bars Imported

Philadelphia—Imports at this port during the week ending July 3 included 401 tons of steel bars from Belgium; six tons of steel bars from Sweden; 48 tons of structural shapes from Belgium; ten tons of steel bands from Belgium and nine tons of bearing tubes from Sweden.

Ernst Iron Works Inc., Buffalo, has increased capital from $20,000 to $50,000.

Scrap

Strength Causes Slight Advance in Prices—Control Passing from Buyers on Light Supplies

Chicago — Two moderate-sized sales of heavy melting steel have re-established the price at the old level of $9, despite the recent nominal weakening of 25 cents, and actual quotations of $8.75 a few days ago. Holiday suspensions reduced shipments the last few days to less than 25 per cent of the recent movement. Dealers and yards find it difficult to cover unfilled orders at existing levels. Sales efforts gradually are easing as far as forward orders are concerned. Dealer buying also is light. All this tends to dislodge control of the market from buyers' hands. The market remains highly sensitive. The Gary melter, whose purchases normally tend to strengthen the market, placed 3000 to 4000 tons of melting steel, and an inde-

Iron and Steel Scrap Prices

Corrected to Tuesday noon. Gross tons delivered to consumers, except where otherwise stated

HEAVY MELTING STEEL

Birmingham	$8.00 to $9.00
Boston, dealers	4.00 to 4.10
Buffalo, No. 1	9.00 to 9.50
Buffalo, No. 2	7.50 to 8.00
Chicago	**8.50 to 9.00**
Cinn., deal.	7.50 to 8.00
Cleve., No. 1	8.50 to 9.00
Cleve., No. 2	8.00 to 8.25
Det., No. 1 deal.	7.50 to 8.00
Det., No. 2 deal	**6.00 to 6.50**
E. Pa. del. mill	**8.00 to 9.00**
N. Y. deal. R. R.	4.50 to 6.50
N. Y. deal. No. 2	3.50 to 4.00
N. Y. deal. yd.	4.00 to 4.50
Pitts., No. 1	10.00 to 10.50
St. L. No. 1 sel	**8.25 to 8.75**
Federal, Ill.	**8.00 to 8.50**
Granite City, Ill.	7.00 to 7.50
Valleys, No. 1	11.00 to 11.50

COMPRESSED SHEETS

Buffalo, dealers	7.50 to 8.00
Chicago	7.50 to 8.00
Cleveland	7.50 to 8.00
Detroit, dealers	7.00 to 7.50
E. Pa. new mat.	8.00 to 9.00
Pittsburgh	9.50 to 10.00
Valleys	10.50 to 11.00

BUNDLED SHEETS

Buffalo	5.50 to 6.00
Cinci., deal.	6.75 to 7.25
Cleveland	6.50 to 7.00
Eastern Pa.	**7.50 to 8.00**
Pittsburgh	8.00 to 8.50
St. Louis	**5.50 to 6.00**

SHEET CLIPPINGS LOOSE

Chicago	**4.00 to 4.50**
Cincinnati	4.00 to 4.50
Detroit, dealers	4.00 to 4.50
St. Louis	5.50 to 6.00

STEEL RAILS SHORT

Birmingham	11.00 to 11.25
Boston, dealers	3.00 to 4.10
Buffalo	12.00 to 12.50
Chicago (3 ft.)	10.00 to 10.50
Chicago (2 ft.)	10.75 to 11.25
Cinci., deal.	**13.00 to 13.50**
Detroit, deal.	11.00 to 11.50
Pitts. (open-hearth, 3 ft. and less)	12.50 to 13.00
St. Louis	12.00 to 12.50

STOVE PLATE

Birmingham	7.00 to 7.50
Boston, con.	5.00 to 5.50
Buffalo	7.50 to 8.00
Chicago, net	**7.00 to 7.50**
Cinci., deal. net	**4.50 to 5.00**
Det., net deal.	4.00 to 4.50
Eastern Pa.	7.50 to 8.00
N. Y., deal. mill	4.00 to 4.50
St. Louis	7.00 to 7.50

COUPLERS, SPRINGS

Buffalo	12.00 to 12.50
Chicago	10.00 to 10.50
Eastern Pa.	**13.00**
Pittsburgh	12.75 to 13.25
St. Louis	**8.75 to 9.25**

ANGLE BARS—STEEL

Chicago	9.75 to 10.25
St. Louis	8.25 to 8.75

LOW PHOSPHORUS

Buffalo, billets and bloom crops	14.00 to 14.50
Cleveland bil. and bloom crops	12.00 to 12.50
Eastern Pa.	13.50 to 14.00
Pittsburgh billet bloom crops	14.50 to 15.00
Pitts. sheet bar crops	13.50 to 14.00

FROGS, SWITCHES

Chicago	8.50 to 9.00
St. Louis	9.50 to 10.00

SHOVELING STEEL

Chicago	8.50 to [illegible]
Cleveland	6.25 to [illegible]
St. Louis	8.00 to [illegible]

RAILROAD WROUGHT

Birmingham	**8.00 to 8.50**
Boston, dealers	8.00 to 8.50
Buffalo, No. 1	7.50 to 8.00
Buffalo, No. 2	9.00 to 9.50
Chicago, No. 1	**8.25 to 8.70**
Chicago, No. 2	**8.50 to 9.00**
Cinci., No. 2	7.50 to 8.00
Eastern Pa.	**10.00**
N. Y., No. 1, deal.	**9.00 to 9.50**
Pitts., No. 2	10.00 to 10.50
St. Louis, No. 1	5.25 to 5.75
St. Louis, No. 2	**8.00 to 8.50**

SPECIFICATION PIPE

Boston	**5.00 to 5.25**
Eastern Pa.	10.00 to 10.50
N. Y., deal	**6.00 to 6.50**

BUSHELING

Buffalo, No. 1	7.50 to 8.00
Chicago, No. 1	7.00 to 7.50
Cinn., No. 1 dl.	6.00 to 6.50
Cinn., No. 2	3.50 to 4.00
Cleve., No. 2	**6.00 to 6.50**
Det., No. 1 new deal.	5.50 to 6.00
St. L., No. 1	6.00 to 6.50
Val. new No. 1	10.00 to 10.50

MACHINE TURNINGS

Birmingham	4.50 to 5.00
Boston, dealers	0.60 to 1.00
Buffalo	4.75 to 5.00
Chicago	3.25 to 3.75
Cinn., deal.	3.75 to 4.25
Cleveland	4.50 to 5.00
Detroit	3.50 to 4.00
Eastern Pa.	5.00 to 6.00
N. Y., deal.	2.00
Pittsburgh	**6.50 to 7.00**
St. Louis	**3.50 to 4.00**
Valleys	7.50 to 8.00

BORINGS AND TURNINGS For Blast Furnace Use

Boston	0.50 to 0.80
Buffalo	5.75 to 6.25
Cinn., deal.	4.50 to 5.00
Cleveland	6.25 to 6.75
Detroit, deal.	3.50 to 4.00
Eastern Pa.	5.50
N. Y., deal.	2.00
Pittsburgh	6.75 to 7.25

CAST IRON BORINGS

Birming., chem.	12.50 to 13.00
Birming., plain	4.50 to 5.00
Boston, chem.	7.00 to 7.25
Boston, deal.	0.60 to 1.00
Buffalo	5.75 to 6.25
Chicago	**3.50 to 4.00**
Cinn., deal.	3.75 to 4.25
Cleveland	6.25 to 6.75
Detroit, deal.	4.00 to 4.50
Eastern Pa.	**5.00 to 6.00**
E. Pa., chem.	11.50 to 12.50
N. Y., deal.	2.00 to 2.50
Pittsburgh	**6.75 to 7.25**
St. Louis	**5.00 to 5.50**

PIPE AND FLUES

Cinn., deal.	6.00 to 6.50

RAILROAD GRATE BARS

Buffalo	6.50 to 7.00
Chicago, net	5.75 to 6.25
Cincinnati	**5.50 to 6.00**
Eastern Pa.	7.50 to 8.00
N. Y., deal.	5.00 to 5.50
St. Louis	6.00 to 6.50

FORGE FLASHINGS

Boston, deal.	5.00 to 5.25
Buffalo	7.50 to 8.00
Cleve. ov. 10 in.	6.50 to 7.00
Detroit	5.75 to 6.25

FORGE SCRAP

Boston, del.	5.00 to 5.25
Chicago	11.50 to 12.00
Eastern Pa.	9.00 to 10.00

ARCH BARS, TRANSOMS

Chicago, net	10.50 to 11.00
St. Louis	8.25 to 8.75

AXLE TURNINGS

Boston, deal.	6.75 to 7.00
Buffalo	8.00 to 8.50
Chi., steelworks	7.50 to 8.00
Cleveland	6.75 to 7.00
Eastern Pa.	8.00 to 9.00
Pittsburgh	8.75 to 9.25
St. Louis	7.00 to 7.50

STEEL CAR AXLES

Birmingham	12.50 to 13.00
Boston, ship. pt.	11.00 to 12.00
Buffalo	15.50 to 16.00
Chicago	12.90 to 13.45
Eastern Pa.	18.50 to 19.50
St. Louis	13.00 to 13.50

SHAFTING

Bos., ship. pt.	10.00 to 10.50
Chicago	9.55 to 10.10
N Y., deal.	12.00 to 13.00
St. Louis	9.50 to 10.00
E. Penna.	18.00

CAR WHEELS

Birming., iron	9.00 to 10.00
Boston, iron	14.00 to 14.50
Buffalo, iron	10.75 to 11.25
Buffalo, steel	11.75 to 12.25
Chicago, iron	10.00 to 10.50
Chi. rolled steel	11.00 to 11.50
Cincinnati, iron	10.50 to 11.00
E. Pa. steel	12.00
E. Pa. iron	12.50 to 13.00
Pitts. iron	10.50 to 11.00
Pitts., steel	12.75 to 13.25
St. Louis, iron	7.75 to 8.25
St. Louis, steel	**10.00 to 10.50**

NO. 1 CAST SCRAP

Birmingham	10.00 to 10.25
Buffalo (mach.)	9.00 to 10.00
Boston, textile	10.00 to 10.50
Chicago, mach.	9.80 to 10.35
Chi., railroad	8.70 to 9.25
Chicago, agri.	8.40 to 8.95
Cinn., mach. cup., gross	12.25 to 12.75
Cleve. cupola	10.00 to 10.50
Det., net deal.	8.00 to 8.50
E. Pa. cupola	**12.50 to 13.00**
N. Y. cup. deal.	7.00 to 7.50
N. Y., del. local foundries	**12.00**
Pitts., cupola	10.00 to 10.50
San Fran., del.	13.50 to 14.00
Seattle	7.50 to 8.00
St. L. No. 1 ma.	9.00 to 9.50
St. L. No. 1	8.25 to 8.75

HEAVY CAST

Boston	10.50 to 11.00
Bos. mach. cast	**11.50 to 12.50**
Buffalo, break	6.50 to 7.00
Cleve., break	6.50 to 7.00
Detroit, auto, net deal.	10.50 to 11.00
Det., break., dl.	5.50 to 6.00
Eastern Pa.	10.00 to 11.00
N. Y. No. 1 dl.	7.00 to 7.50
N. Y. break. dl.	6.00 to 6.50
Pittsburgh	8.00 to 8.50

MALLEABLE

Boston R. R.	13.00 to 13.50
Buffalo	10.00 to 10.50
Chicago, agri.	9.00 to 9.50
Chicago, R. R.	9.50 to 10.00
Cinn., R. R. dl.	**11.00 to 11.50**
Cinn., agri., dl.	10.00 to 10.50
Cleveland, rail	10.00 to 10.50
Det. auto deal.	10.50 to 11.00
St. Louis, rail	**8.00 to 8.50**

RAILS FOR ROLLING 5 feet and over

Birmingham	10.50 to 11.00
Boston	7.50 to 8.00
Buffalo	10.00 to 10.50
Chicago	10.50 to 11.00
Eastern Pa.	11.50 to 12.00
New York	7.00 to 7.50
St. Louis	10.50 to 11.00

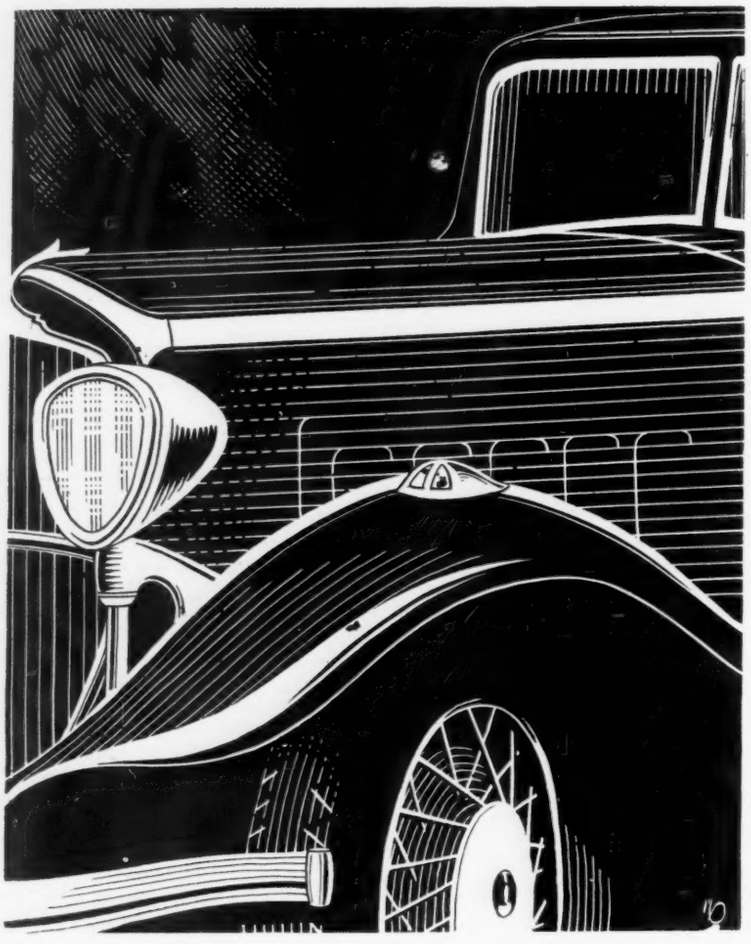
LOCOMOTIVE TIRES

Chicago, cut	11.50 to 12.00
St. L., No. 1	**10.50 to 11.00**

LOW PHOS. PUNCHINGS

Chicago	10.75 to 11.25
Buffalo	13.00 to 13.50
Eastern Pa.	13.00 to 14.00
Pittsburgh	13.50 to 14.00

WEIRTON



AUTO BODY SHEETS

FULL FINISHED SHEETS

WEIRTON PRODUCTS INCLUDE:

Pig Iron
Open Hearth Steel
Billets—Slabs—Sheet Bar—Skelp
Coke Tin Plate
Tin Mill Black Plate
Copper Bearing Terne Plate
Hot and Cold Rolled Strip Steel
and
Strip Steel Sheets
Galvanized, Black and Blue
Annealed Sheets
Single Pickled Full Finished
and Auto Body Sheets

•

SAVE WITH STEEL

Modern designs in automobile bodies and metal furniture, etc., demand full finished sheets of unusual character to solve the many deep and intricate drawing problems.

Depend on Weirton! Every process and operation in the manufacture of Weirton steel products, from ore mine to finished marketable product, is under complete ownership control of our organization.

Name your objective and Weirton engineers will see that your steel requirements are correctly met in every detail—both mechanically and metallurgically.

WEIRTON STEEL CO.

Division of National Steel Corporation

WEIRTON W. VA.

SALES OFFICES IN ALL PRINCIPAL CITIES

pendent steelworks ordered about 2000 tons, all at $9, delivered in the Chicago switching district. Prospects of 25 per cent steelworks operations soon in this district have a depressing effect, but resistance thus far is being maintained. Fairly high prices are paid for railroad scrap.

Boston—Little business was done in steel and iron scrap during the past week. The Worcester buyer has cut down shipments so that only a few carloads of bundled skeleton went there last week. Otherwise the market is flat with no indications of betterment. Prices, however, held firm.

Canadian Scrap

Dealers' Buying Prices

MONTREAL

Per Gross Ton

Iron axle	$11.00
Steel axles	10.00
Car wheels	8.00
Stove plate	8.00
Wrought pipe	2.00
Turnings	2.00
Heavy melting steel	6.00

TORONTO

Steel axles	7.00
Iron axles	7.00
Heavy melting steel	7.00
Turnings	2.00
No. 1 mach. cast (net)	9.00
Malleable (net)	7.00

New York—Scrap prices are steadier. With steel mill operations down, the buying is curtailed. The Claymont, Del., mill is taking little scrap and the movement to Buffalo by barge also holds well, but consumers as a rule are buying close to requirements, which are small. Production and collection of scrap are light. Contract has been awarded for wrecking the Thirty-fourth street elevated spur, the city to pay approximately $7500 in addition to the scrap, which will amount to several thousand tons.

Philadelphia—Steel and iron scrap are unchanged for the second consecutive week. There is little trading and most grades appear plentiful at present levels.

Buffalo—After long hesitation over acceptance of an offer to purchase No. 1 heavy melting steel at $9 and No. 2 at $7.50 for local delivery, two dealers are said to have made small contracts at these levels. Deliveries are to begin at once. The prices are the lowest paid locally for both materials in many months. The rest of the list has been weakened by acceptance of the offer although some dealers claim tonnage is not deliverable at the lower levels.

Pittsburgh—Prices of steel and iron scrap are stronger at recent levels but in most cases advances are held back by lack of mill buying. Heavy melting steel on the Pennsylvania railroad list brought up to $11, about a dollar more than a month ago. The consumers' market remains $10 to $10.50, but it is doubtful if new buying could be done at this level. Compressed sheets are unchanged but nominal and low phosphorus grades are a shade higher.

Cleveland—The Otis Steel Co. has suspended shipments on blast furnace scrap. This leaves the Steel corporation subsidiary the only steelworks interest in the district now taking material. The latter has placed an additional tonnage of selected No. 1 steel at a price reported to be $10, representing a reduction of 50 cents from the last purchase. Quotations are nominal and unchanged with the exception of machine shop turnings. This grade is off 50 cents following completion of the order placed some time ago by Corrigan, McKinney. Valley quotations show a general advance of $1.00 a ton. Consumers at Youngstown, Warren and Lowellville, O., are taking limited shipments this week.

Detroit—Dealer covering on contracts and buying to obtain yard supplies at present low prices, at a time when production is low, have resulted in advances of 25 to 75 cents on several grades of open-hearth and blast-furnace scrap. Definite strength is noted in the market as a whole.

Cincinnati—During the past week only light shipments of iron and steel scrap on contracts were reported, the market disclosing exceptionally dull demand. Quotations remain unchanged, but in most grades are nominal. A few cars of specialties were moved.

St. Louis—Hot weather and the holidays, have reduced activities in iron and steel scrap to a minimum. The movement has been the smallest in a number of months and there is a general disposition to mark time.

Birmingham, Ala.—Small lots predominate in iron and steel scrap, with conditions unchanged as to price, melters making the offer. Heavy melting steel is most active.

Toronto, Ont.—Local dealers find little demand for either iron or steel scrap. No. 1 machinery cast has some customers, but none are placing forward delivery contracts. Stove plate and malleable scrap are dull and other lines spotty. Dealers are out of the market and prices remain unchanged.

Somerville Stove Works, Somerville, N. J., has discontinued its foundry.

Coke

More Contracting for Beehive Foundry Fuel — Requirements Are Down Slightly

COKE PRICES, PAGE 70

Pittsburgh — Foundry coke requirements are moderating slightly, while the furnace grade continues as dull as formerly. Contracting for foundry fuel is fairly active at $4.50 for premium brands, and $3.25 for standard grades. Furnace coke usually is quoted at $2.40 in the spot market, with other than standard fuel selling down to $2. Coal prices are no stronger as a result of the strikes and the market is quiet.

Boston—Because of the low melt at foundries demand for foundry coke remains dull. Little business is in prospect.

New York—Dullness in beehive coke is accentuated by midsummer suspension of operations at various foundries in this district. Prices, however, are unchanged, beehive furnace holding at $2 to $2.25, Connellsville, Pa., and standard grades of beehive foundry coke at $3 to $3.25, Connellsville. Premium brands are $4.50, Latrobe, Pa., the equivalent of $4.30, Connellsville. By-product foundry coke is $8.70 to $9.10, Newark, N. J.; $10.50, New England; and $8.75, Philadelphia.

Cincinnati—Specifications for by-product foundry coke in June were slightly off, as compared to May. Quotations remain unchanged at $9, delivered Cincinnati. Business in domestic grades is steady.

St. Louis—Typical summer dullness prevails in the market for metallurgical coke. Further reductions in the melt have reduced demand. By-product interests report moderate increase in reserve stocks.

Birmingham, Ala.—Production is being maintained while demand lags. Few contracts for last half year are noted. Prices are steady.

Pacific Coast

Sales in Southern Area Exceed First Half 1930 Except in Pipe —Golden Gate Bridge Bids to Be Acted on Soon—Northwest Business Slack and Prices Are Uncertain and Weak

San Francisco—(*By Air Mail*)—Sales and inquiries for iron and steel products this week on the Pacific coast were confined, for the most part, to small, unimportant tonnages. The largest award involved 1500 tons of structural shapes and 1500 tons of reinforcing bars for a naval ammunition depot in Oahu, T. I., placed with an unnamed interest. The general contract for this structure went to Thomas Haverty Co., Los Angeles. No change in prices is noted.

Bars, Plates and Shapes

Awards of concrete bars for the first half of this year aggregated 34,876 tons, compared with 26,246 tons for the corresponding period last year. Bids have been opened on 500 tons for a prison at Anthony, New Mex., and on 100 tons for a bridge over Coyote creek, Santa Clara County, Calif. San Francisco will open bids July 15 on 110 tons for the Upper Alameda creek dam. Out-of-stock quotations in the San Francisco district remain unchanged at 2.60c, base, on carload lots, while Los Angeles district prices hold at 2.50c. Movement of merchant bar steel continues to involve small lots. Prices on this class of material hold at 2.05c, c.i.f.

Coast Pig Iron Prices

Utah basic	$22.00 to 24.00
Utah foundry	22.00 to 24.00
*German	24.25
*Indian	22.00 to 24.00

*C.i.f. duty paid.

Plate awards during the first half of 1931 totaled 106,057 tons, compared with 26,567 tons for the same period in 1930. The only pending business of size involves 250 tons for 3 to 8-inch welded steel pipe for the Vista Irrigation District, Vista, Calif., bids on which will be opened July 24. Prices remain unchanged at 2.00c, c.i.f.

Structural shape bookings for the first half of the year aggregated 57,945 tons, compared with 49,124 tons for the same period last year. The Virginia Bridge & Iron Co. took 175 tons for a bridge over the Southern Pacific railroad near Burbank, Calif. No action is expected to be taken on 110,000 tons for the Golden Gate bridge until July 8. New inquiries include 4500 tons for a health center, Grove and Polk streets, San Francisco. Plain material is quoted at 2.05c to 2.15c, c.i.f.

Other Finished Material

The only cast iron pipe award of importance reported this week went to the American Cast Iron Pipe Co., 810 tons of 20-inch class 250 pipe for San Bernardino, Calif. During the first half of 1931 bookings aggregated 36,817 tons, compared with 49,232 tons for the same period a year ago. San Francisco has opened bids on 2096 tons of 4 to 12-inch class B pipe. Oakland will open bids next week on 2365 tons of 2 to 8-inch class B or 150 pipe and on 750 tons of 16-inch class B pipe. Movement of standard pipe continues to involve small lots only. No large pipe line inquiries are current.

Demand for sheet material has shown little or no improvement during the past two or three weeks. Most sales and inquiries involve less than carload lots. Hot-rolled annealed No. 24 gage is quoted at 3.00c, c.i.f. No. 24 gage galvanized sheets hold at 3.50c, c.i.f. Blue annealed No. 10 gage appears firm at 2.50c, c.i.f.

Some Business in Sight

Seattle — Business is generally slack in the Pacific Northwest but several relatively important tonnages of steel are to be up for decision soon. Bids will be opened July 21 for the Seattle federal building superstructure involving about 4000 tons of shapes in addition to steel reinforcing materials for floor slab. Subcontract for concrete bars, 1000 tons, for the Seattle Marine hospital will be awarded late this month. Bids will be opened July 10 for the Cle Elum dam, involving 2000 tons of structurals and reinforcing which the government will supply to the contractors. Plans are being completed for new approaches to the University bridge, Seattle, which are to be built this fall. About 1200 tons of structurals will be required.

Bars, Plates and Shapes

Mill prices are nominal but unchanged, as follows: Plates, 2.00c; shapes, 2.05c; merchant bars, 2.10c. Reinforcing material remains 2.30c for lots of 250 tons and 3.00c for car lots. Demand for concrete bars is far below normal and few inquiries are in the market. Less business was placed in June than for several past months. Pacific Coast Steel Corp. is closing its open-hearth furnaces at the local plant during July, having a surplus of ingots on hand. The rolling mill will be operated as required. West Coast Construction Co. has awarded the Pacific Coast Steel Corp., Seattle, the subcontract for furnishing 340 tons of concrete bars for the Albro Place viaduct, Seattle.

No operations requiring plates are up for figures and no important projects are in prospect. The government will require about 250 tons of sheet steel piling for the Cle Elum dam job, construction bids called for July 10. Tacoma will receive bids July 6 for a small tonnage of 60 and 63-inch steel pipe.

Fabricating plants also are short of orders. A railroad bridge involving 800 tons is pending but no other large projects are up for immediate action except the Seattle Federal building. Lakeside Bridge & Steel Co., Milwaukee, is reported to have the contract to construct three large cranes for the Puget Sound navy yard, involving 1500 tons of shapes. The same company is building two 10-ton cranes, with 100-foot spans, for the Seattle assembly plant of the Ford Motor Co., about 100 tons of steel involved. One or two gantry cranes, 60-ton capacity, are to be ordered for the Seattle Ford plant but contracts are not yet placed.

Pipe Inquiry Is Better

There is a slightly improved inquiry for cast iron pipe as Northwest municipalities prepare to cover additional needs. Eugene, Oreg., is in the market for two miles of 10 and 12-inch pipe, about 400 tons. Elma, Wash., is calling for about 300 tons and Wenatchee, Wash., will open bids July 20 for 250 tons of 16-inch pipe. Bremerton, Wash., is planning a water system extension, involving a small tonnage. Seattle will open bids this week on two projects calling for 850 tons. Washington Water Power Co. has asked a state permit for a water supply for Clarkston, Wash., the improvement calling for an expenditure of $150,000. An award of 100 tons, 5200 feet, of class 150 cast iron pipe for the United States Indian hospital near Tacoma, Wash., was divided between the United States Pipe & Foundry Co. and American Cast Iron Pipe Co.

Old Materials Are Slow

The scrap markets are at record lows both as to price and turnover. Local mills are practically out of the market, as they have large stocks on hand.

Steel, Wrought and Cast Iron Pipe, and Tubing

Welded Iron, Steel Pipe

Base Price $200 Ton

Base Discounts on steel pipe, Pittsburgh and Lorain, O., to jobbers in carloads. Indiana Harbor, Ind., and Evanston, Ill., 2 points less. Chicago del., 2½ points less. Wrought pipe, Pittsburgh base.

BUTT WELD

	Steel			Iron	
In.	Blk.	Gal.	In.	Blk.	Gal.
½	58	44½	½	23	5
¾	62	50½	¾	28	11
1—3	64	52½	1—1¼	31	15
			1½—2	35	18

LAP WELD

2	57	45½	2	23	9
2½—6	61	49½	2½—3½	28	13
7—8	58	45½	4—6	30	17
9—10	56	43½	7—8	29	16
11—12	55	42½	9—12	26	11

BUTT WELD

Extra strong, plain ends

½	55	44½	¼ & ⅜	+13	+48
¾	60	49½	½	23	7
1—1½	62	51½	¾	28	12
2—3	63	52½	1—2	34	18

LAP WELD

Extra strong, plain ends

2	55	44½	2	29	13
2½—4	59	48½	2½—4	34	20
4½—6	58	47½	4½—6	33	19
7—8	54	41½	7—8	31	17
9—10	47	34½	9—12	21	8
11—12	46	33½			

To large jobbers these discounts on steel pipe increased on black by 1 point and two discounts of 5 per cent; on galvanized by 1½ points with two 5 per cents. Direct mill shipments, base, 5 and 2½. On iron pipe large jobbers obtain additional discount of 1 point with 5 and 2½ per cent on black and galvanized.

BOILER TUBES

Carload Discounts, f. o. b. Pittsburgh

Lap Welded Steel		Charcoal Iron	
2—2¼	38	1¾	8
2½—2¾	46	2—2¼	13
3	52	2½—2¾	16
3¼—3¾	54	3	17
4	57	3¾—3½	18
4½—6	46	4	20
1½	1	4½	21

On lots of a carload or more, above base discounts subject to preferential of two 5 per cent discounts on steel and 10 per cent on charcoal iron. Smaller quantities subject to following modifications from base discounts.

Lap Welded Steel—Under 10,000 pounds, 6 points under base and one 5 per cent; on 10,000 pounds to carload, 4 points under base and one 5 per cent; on 10,000 pounds to carload, 4 points under base and two 5 per cents. Charcoal Iron—under 10,000 pounds, 2 points under base; on 10,000 pounds to carload, base and one 5 per cent.

STANDARD COMMERCIAL SEAMLESS BOILER TUBES

COLD DRAWN

1 inch	61	3	46
1¼—1½	53	3¼—3½	48
1¾	37	4	51
2—2¼	32	4½, 5, 6	40
2½—2¾	40		

HOT ROLLED

2—2¼	38	3¼—3½	54
2½—2¾	46	4	57
3	52	4½, 5, 6	46

Subject to 5 per cent supplementary discount for carload lots. On less than 10,000 pounds, base discount reduced 6 points. On 10,000 pounds to carload, base discount reduced 4 points and one 5 per cent allowed. No extra for lengths up to and including 24 feet. Sizes smaller than 1 inch and lighter than standard gage to be held at mechanical tubes list and discount. Intermediate sizes and gages not listed take price of next larger outside diameter and heavier gage.

Seamless Tubing

Cold drawn; f.o.b. mill discounts

Random lengths over 5 ft. 55%
Selected lengths, 1—18 ft. 53%

Cast Iron Water Pipe

Class B Pipe—Per Net Ton

Six-inch and over, Bir. ....$35.00 to 36.00
Four-inch, Birmingham .... 39.00 to 40.00
Four-inch, Chicago ..... 45.00 to 47.00
Six to 24-inch, Chicago..... 42.00 to 44.00
Six-inch and over, N. Y..... 34.50 to 36.50
Four-inch, New York ..... 39.50 to 40.50
Stand. fittings, Bir. base.... $100.00

Six to 24-inch, base; over 24-inch plus $20; 4-inch, plus $10; 3-inch plus $20; gas pipe fittings, $5 higher. Class A pipe $4 higher than Class B.

Warehouse Quotations at Leading Centers, in Cents Per Pound

STEEL BARS

Baltimore	3.00c
Boston	3.265c
Buffalo	3.00c
Chattanooga	3.10c
Chicago	2.75c
Cincinnati	3.00c
Cleveland	2.75c
Detroit	2.85c
Houston	3.00c
Los Ang.	3.40c
New York‡(d)	3.10c
Philadelphia	2.60c
Pittsburgh	2.60c
Portland	3.15c
San Frans.	2.40c
Seattle	3.00c
St. Louis	3.00c
St. Paul	3.00c
Tulsa	3.65c

IRON BARS

Baltimore	3.25c
Boston	3.265c
Buffalo	3.15c
Chattanooga	3.10c
Chicago	2.75c
Cincinnati	3.00c
Detroit	3.00c
New York‡(d)	3.10c
Philadelphia	2.60c
St. Louis	3.00c
Tulsa	3.65c

REINFORC. BARS

Baltimore	2.50c-3.31c
Boston	3.265c
Buffalo	2.95c
Chattanooga	3.10c
Cincinnati	3.00c
Cleveland	2.10-2.25c
Detroit	2.85c
Houston	3.00c
Los Ang. cl.	2.40c
Los Ang. lcl.	2.70c
New York	2.65c-3.10c
Phila.	2.40c-3.00c
Pittsburgh	2.75c
San Fran. cl.	2.30c
San Fran. lcl.	2.50c
Seattle	3.00c
St. Louis	3.15c
Tulsa	3.65c
Young.	2.30c-2.60c

SHAPES

Baltimore	3.00c
Boston	3.365c
Buffalo	3.25c
Chattanooga	3.20c
Chicago	3.00c
Cincinnati	3.25c
Cleveland	2.95c
Detroit	3.10c
Houston	3.25c
Los Ang.	3.40c
New York(d)	3.10c
Philadelphia	2.50c
Pittsburgh	2.85c
Portland	3.15c
San Fran.	2.40c
Seattle	3.00c
St. Louis	3.25c
St. Paul	3.10c
Tulsa	3.75c

PLATES

Baltimore	3.00c
Boston	3.365c
Buffalo	3.25c
Chattanooga	3.20c
Chicago	3.00c
Cincinnati	3.25c
Cleveland, ¼-in. and thicker	2.95c
Clev., 3/16-in.	3.20c
Detroit	3.10c
Det., 3/16-in.	3.10c
Houston	3.00c
Los Angeles	3.40c
New York(d)	3.30c
Philadelphia	2.50c
Phila. floor	5.10c
Pittsburgh	2.85c
Portland	3.15c
San Fran.	2.40c
Seattle	3.00c
St. Louis	3.25c
St. Paul	3.10c
Tulsa	2.75c

NO. 10 BLUE

Baltimore	3.25c
Boston	3.915c
Buffalo	3.50c
Chattanooga	3.60c
Chicago	3.20c
Cincinnati	3.30c
Cleveland	3.00c
Detroit	3.35c
Houston	3.90c
Los Ang.	3.95c
N. Y. (d)	3.00c-3.40c
Portland	4.00c
Phila.*†	3.05c
Pitts.**	2.60c to 2.85c
San Fran.	3.65c
Seattle	3.75c
St. Louis	3.45c
St. Paul	3.40c
Tulsa	3.95c

NO. 24 BLACK

Balt.*†	3.50c
Boston	4.70c
Buffalo	3.70c
Chicago	3.55c
Cincinnati	3.75c
Cleveland	3.60c
Detroit	3.50c
Los Ang.	4.70c
New York	3.50c-3.65c
Phila.*†	3.40c
Pitts.**	3.30c
Portland	4.50c
San Fran.	4.15c
Seattle	4.25c
St. Louis	3.80c
St. Paul	3.545c
Tulsa	4.10c

NO. 24 GAL. SHEETS

Balt.*†	4.00c
Boston	5.45c
Buffalo	4.10c
Chicago (local del.)	4.35c
Chicago (outside)	4.35-4.60c
Cincinnati	4.25c
Cleveland	4.00c
Detroit	4.00c
Houston	5.40c
Los. Ang.	5.10c
New York	4.00c-4.10c
Phila.*†	3.85c
Pitts.**	3.90c
Portland	5.00c
San Fran.	4.65c
Seattle	4.75c
St. Louis	4.35c
St. Paul	4.23c
Tulsa	4.60c-4.75c

BANDS

Baltimore	3.50c
Boston	4.015c-5.00c
Buffalo	3.35c
Chattanooga	3.30c
Chicago	2.95c
Cincinnati	3.20c
Cleveland	3.00c
Det. 3/16-in. & lighter	3.15c
Houston	3.65c
Los Ang.	4.30c
New York(d)	3.40c
Philadelphia	2.90c
Pittsburgh	2.95c
Portland	3.50c
San Fran.	3.75c
Seattle	3.50c
St. Paul	3.75c
Tulsa	3.85c

HOOPS

Baltimore	3.50c
Boston	5.50c-6.00c
Buffalo	3.90c
Chicago	3.50c
Cincinnati	3.75c
Cleveland	3.55c
Det. No. 14 & lighter	3.65c
New York	3.75c
Philadelphia	3.15c
Pittsburgh	3.60c
Seattle	4.90c
St. Paul	3.75c

COLD FIN. STEEL

Rounds & Hexagons

Baltimore (c)	3.30c
Boston	3.50c
Buffalo	3.15c
Chattanooga*	3.85c
Chicago	3.10c
Cincinnati	3.50c
Cleveland	3.10c
Detroit	3.65c
Los Ang. (a)	4.50c
New York	3.40c
Philadelphia*	3.40c
Pittsburgh	3.10c
Portland (a)	4.50c
San Fran.(a)	4.25c
Seattle (a)	4.50c
St. Paul (a)	3.85c
St. Louis	3.35c
Tulsa	4.75c

Flats and squares 50c extra, except Tulsa, where 5.14c is quoted.
(a) Rounds, hex. only.

COLD ROLL. STRIP

Boston 0.100 in., 500 lb. lots	5.30c
Buffalo	5.65c
Chicago (soft) (b)	5.65c
Cincinnati	5.80c
Clev. (b)	5.55c
Detroit	5.40c
Phila. (c)	4.55c
New York	4.55c

(b) Net base straightening, cutting, boxing 1 ton or more.
(c) Plus mill, size and quantity extras.
(d) Minus quant. diff.
‡Domestic bars.
*Plus quantity extras.
**Less than 25 sheets.
*†50 or more bundles.

TENNESSEE

STRUCTURAL STEEL

-in Power and Industrial Plants

Electric power is playing an ever-increasing part in the remarkable industrial development of the South and Southwest—and Tennessee Structural Steel is playing an ever-increasing part in the development of the power industry. Power and industrial plants in growing numbers owe their strength, their security, their fire-safeness and permanent value to "back-bones" of Tennessee Structural Steel.

TENNESSEE COAL, IRON & RAILROAD COMPANY

General Offices: Brown-Marx Building, Birmingham, Ala.

Subsidiary of United States Steel Corporation

PRINCIPAL SUBSIDIARY MANUFACTURING COMPANIES

AMERICAN BRIDGE COMPANY
AMERICAN SHEET AND TIN PLATE COMPANY
AMERICAN STEEL AND WIRE COMPANY
CARNEGIE STEEL COMPANY
COLUMBIA STEEL COMPANY
CYCLONE FENCE COMPANY
FEDERAL SHIPBUILDING AND DRY DOCK COMPANY
ILLINOIS STEEL COMPANY
MINNESOTA STEEL COMPANY
NATIONAL TUBE COMPANY
OIL WELL SUPPLY COMPANY
THE LORAIN STEEL COMPANY
TENNESSEE COAL, IRON & R. R. COMPANY
UNIVERSAL ATLAS CEMENT COMPANY

Pacific Coast Distributors—Columbia Steel Company, Russ Building, San Francisco, Calif. *Export Distributors*—United States Steel Products Company, 30 Church Street, New York, N. Y.

Mill Products

Base price cents per pound f.o.b. mill except otherwise specified. Copper and brass product prices based on 9.00c, Conn., for copper

Sheets	
Yellow brass (high)	16.25
Copper, hot rolled	18.87½
Lead, full sheets (cut ½c more)	8.25
Zinc sheet (100-lb. base)	8.75
Tubes and Pipes	
Seamless yellow brass (high)	21.12½
Seamless copper	21.37½
Rods	
Yellow brass (high, full turnings)	14.50
Naval brass	15.50
Anodes	
Copper, untrimmed	16.37½
Wire	
Yellow brass (high)	16.75

Old Metals

Dealers' buying prices, cents lb.

Heavy Red Brass	
New York	5.00 to 5.25
Chicago	5.00 to 5.50
Cleveland	5.50 to 6.00
St. Louis	5.25
Heavy Yellow Brass	
New York	3.25 to 3.50
Heavy Copper and Wire	
New York	6.50 to 6.75
Boston	5.50 to 5.75
Chicago	5.25 to 5.75
Cleveland	5.50 to 6.00
St. Louis	5.50 to 5.75
Red Brass Borings	
New York	4.50 to 4.75
Yellow Brass Tubing	
Cleveland	3.25 to 3.50
Light Copper	
New York	5.25 to 5.50
Chicago	4.75 to 5.25
Cleveland	5.00 to 5.50
St. Louis	5.25
Light Brass	
Boston	2.25 to 2.50
Chicago	2.75 to 3.25
Cleveland	2.25 to 2.50
St. Louis	3.00 to 3.25
Zinc	
New York	1.25 to 1.50
Cleveland	1.25 to 1.50
St. Louis	1.50
Aluminum	
Clippings, soft, Cleveland	12.00 to 13.00
Clippings, hard, Cleveland	10.00 to 10.50
Borings, Cleveland	4.50 to 5.00
Mixed cast, Cleveland	4.50 to 5.00
Mixed cast, Boston	3.75 to 4.00
Mixed cast, St. Louis	4.00

Secondary Metals

Remelt aluminum No. 12	9.00 to 10.50
Brass ingots, 85-5-5-5	8.62½

Metals

Demand Eases Off After Recent Price Upturns—Copper Weakens—Zinc and Lead Steady

New York—Metal market activity has been more calm through the past week after recent increases in trading and prices. All of metals have held their price gains well with the exception of copper.

The international debt situation has been a dominating influence in all metals. In the past few days, the uncertainty of this undertaking has been reflected in the market. The recent return of confidence in domestic markets has been a significant development, but metals give little indication of any important change in shipments except zinc and lead.

Copper—The last part of the rise to 9.00c and export business done on the last rise were due to false hope on curtailment as well as the news on reparations, according to market opinion. With curtailment turning to disappointment for the immediate future, sellers weakened. On Tuesday, custom smelters were willing to do business at 8.25c, and the extent of this setback, only ½-cent above the low point, placed the market in a demoralized state. Further curtailment is so complicated in the copper industry that it seems almost insuperable. Copper wire was cut ½c Tuesday.

Zinc—Prime western recently recovered rapidly to 4.00c, East St. Louis, for prompt, but in the past few days metal has been available at 3.95c. New business has been light but curtailment both in mining and smelting has been drastic. June stocks were cut 4121 tons. The ore market has gone up to $23 a ton, a recovery of $3 from the low point.

Tin—Dealers and speculators have bought freely in the past week. Last month's stocks continued to accumulate, but the increase in the official world's visible supply was only 395 tons to a total of 51,626 tons, or less than expected. Deliveries in the United States in the first half of the year were 35,750 tons compared with 37,805 in the first half of 1930 and 48,090 in the first half of 1929.

Lead—Recent buying has been by far the largest in a long time, but in the past few days the market has been quiet. Prices are firm at nearly ¾-cent above the low of spring.

Coke By-Products Sales Lighter; Sulphate Easier

New York—Sulphate of ammonia is dull with the contract shipping season practically closed. Prices are reflecting the seasonal drift and have softened to $1.60 per 100 pounds, Atlantic seaboard. Sales are limited to light spot lots.

Distillates are unchanged and steady. Volume is off due to the holiday, but June was a satisfactory month and the outlook is fair for July. Stocks are light and current demand at times continues to top output, putting the market in a firm position.

Coke By-Products

	Spot
Per Gallon, Producers' Plants, Tank Lots	
Pure benzol	$0.18 to 0.19
90 per cent benzol	0.18 to 0.19
Toluol	0.27 to 0.29
Solvent naphtha	0.24 to 0.25
Commercial xylol	0.24 to 0.25
Per Pound at Producers' Plants in 250-Pound Drums	
Phenol	0.16 to 0.17
Per Pound at Producers' Plants	
Naphthalene flakes	3.75 to 4.75
Naphthalene balls	4.75 to 5.75
Per 100 Pounds Atlantic Seaboard	
Sulphate of ammonia	$1.60

Quicksilver Weak at $94

New York—Quicksilver is weak with small spot lots around $94 a flask. Large lots are obtainable several dollars less but not all sellers recognize the lower quotations.

Prices of the Week, Cents a Pound

	Copper, Electro delivered	Copper, Lake delivered	Copper, Casting refinery	Straits Tin, New York, Spot	Straits Tin, New York, Futures	Lead, New York	Lead, East St. L.	Zinc, St. L.	Aluminum 98-99%	Antimony, Spot	Nickel, Ingot
July 1	8.50	9.00	8.37½	25.45	25.97½	4.40	4.22½	3.90	22.90	7.00	35.00
July 2	8.25	9.00	8.00	26.05	26.45	4.40	4.22½	4.00	22.90	7.00	35.00
July 3	8.25	9.00	8.00	26.40	26.80	4.40	4.22½	4.00	22.90	7.00	35.00
July 4 (holiday)											
July 6	8.50	9.00	8.25	26.37½	26.75	4.40	4.22½	3.97½	22.90	7.00	35.00
July 7	8.25	9.00	8.12½	26.12½	26.50	4.40	4.22½	3.95	22.90	7.00	35.00

Europe

Moratorium Plan Continues to Strengthen Foreign Markets—British Tin Plate More Active

London—(*By Cable*)—Export markets are reviving, STEEL correspondents at Paris, Brussels and Berlin noting improvements. In Belgium prices are firm and tending to increase. Sentiment in Germany is stronger. These developments are believed to result mainly from the suggested moratorium on war debt payments.

In Great Britain the markets are dull, except for tin plate. Several tin plate mills are reopening; prices are firmer and export sales are improving. Sheffield works are obtaining orders for rails from China to apply on the Boxer indemnity.

Pig iron exports from Middlesbrough dropped to 3600 tons in June. France is reported to be importing hematite from Holland.

The British government is rushing action on the coal mine bill, extending the present status for one year. Mine owners are objecting strongly.

Steel Sales to Russia Only German Bright Spot

Berlin—German export sales of iron and steel proceeded at an unsatisfactory rate, and lack of demand from South America and the Far East is resulting in continued contraction of business. The only bright feature registered during recent week has been the sale of about 300,000 metric tons of rolled products to Russia at the basis price of about £5 2s ($24.81) for merchant bars, the total value of the sales being about 30,000,000 marks. Forty per cent of this tonnage was merchant bars, 40 per cent of plates, and the remainder of structural shapes and billets. Delivery is to commence immediately, and it is expected they will be completed within two months.

Foreign shipments of merchant bars totaled 56,492 metric tons in April, against 66,139 tons in March, but at the same time exports of A-products increased. These export shipments have been generally effected at unsatisfactory prices, but owing to their advance since the beginning of the year, combined deliveries at home and abroad increased from 323,685 metric tons in January to 352,396 tons in April. For the first four months of the year, all shipments were substantially smaller than during the corresponding period of 1930, as may be seen from the following table, in metric tons:

	(Jan.-April) 1931	1930
Semifinished products	251,370	343,154
Material for the permanent way	354,581	450,708
Structural shapes	215,778	382,796
Total, A-products	821,729	1,176,658
Merchant bars	523,999	951,923

The steelworks association is selling practically no merchant bars on the export markets, owing to unsatisfactory prices. Foreign sales of bands have been limited, the same being the case with regard to plates.

Railroads May Buy

The domestic market has been rather stagnant, the political unsettledness and the new advance of money rates having increased reluctance of consumers. It is reported that railroads will spend 200,000,000 marks on material for permanent way and in placing orders for bridges and buildings, but money for these orders is not yet available. It is hoped monthly deliveries of material for permanent way will be increased by these orders from 20,000 to 60,000 metric tons over a period of seven months. The price situation on the domestic market is dull.

Annual reports of various industrial combines are unsatisfactory. The Gelsenkirchen Mining Co. has cut its annual dividend from 8 per cent in 1929 to 6 per cent in 1930, and the Lothringen Mining Co., which in 1929 paid 3 per cent, is paying no dividend. The Charlottenhutte, however, is maintaining its 14 per cent dividend. In the Upper Silesian industry merging of works is not yet terminated, and there is a question of merging the Borsigwerke with the Prussian Mining Co. and the United Upper Silesian Smelting Co.

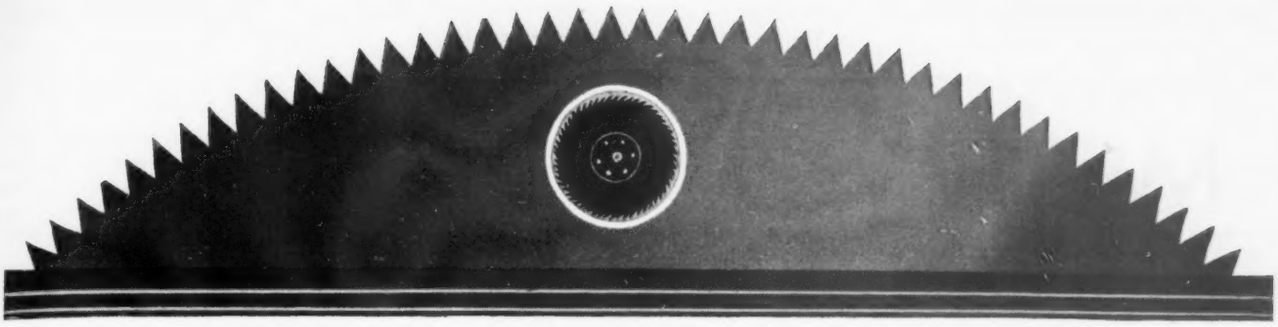
The government is trying in vain to induce mine owners to reduce their coal prices by about one mark per ton, and with this end in view it is planned to exempt owners partially from payments to be made to the social insurance funds.

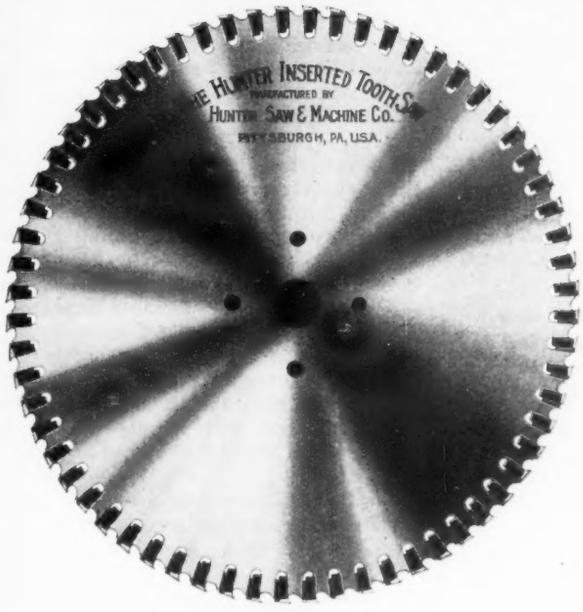
Current Iron and Steel Prices of Europe

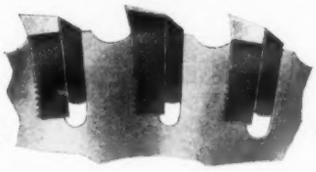
Dollars at Rates of Exchange, July 6	*British* Gross Tons U. K. Ports		*French* Metric Tons Channel Ports		*Belgium and Luxemburg* Metric Tons Channel Ports		*German* Metric Tons Rotterdam or North Sea Port	
Export Prices f.o.b. Ship at Port of Dispatch—By Cable								
PIG IRON		£ s d		£ s d		£ s d		£ s d
Foundry No. 3**	$14.24	2 18 6*	$11.57	2 7 6	$11.57	2 7 6	$11.87	2 8 9
Basic-bessemer	14.61	3 0 0†	11.08	2 5 6	11.08	2 5 6	13.39	2 15 0
Hematite, Phos. .02-.05	15.34	3 3 0	.....	.....	.....	.....	17.05	3 10 0
SEMIFINISHED STEEL								
Billets	$25.57	5 5 0	$15.34	3 3 0	$15.34	3 3 0	$15.83	3 5 0
Wire rods	41.40	8 10 0	25.57	5 5 0	25.57	5 5 0	25.57	5 5 0
FINISHED STEEL								
Standard rails	$40.18	8 5 0	$31.66	6 10 0	$31.66	6 10 0	$31.66	6 10 0
Merchant bars	1.52c	7 0 0	.78c	3 10 6	.78c	3 10 6	.76c	3 9 0
Structural shapes	1.68c	7 15 0	.74c	3 7 6	.74c	3 7 6	.75c	3 8 0
Plates	1.79c	8 5 0	.99c	4 10 0	.99c	4 10 0	.90c	4 2 0
Sheets, black, 24 gage	1.90c	8 15 0	1.76c	8 0 0	1.76c	8 0 0	1.79c	8 2 6
Sheets, gal., 24 ga. corr.	2.12c	9 15 0	2.20c	10 0 0	2.20c	10 0 0	2.31c	10 10 0
Bands and strips	2.06c	9 10 0	.91c	4 2 6	.91c	4 2 6	.94c	4 5 0
Plain wire, base	2.06c	9 10 0	1.10c	5 0 0	1.10c	5 0 0	1.10c	5 0 0
Galvanized wire, base	2.39c	11 0 0	1.35c	6 2 6	1.35c	6 2 6	1.38c	6 5 0
Wire nails, base	2.39c	11 0 0	1.10c	5 0 0	1.10c	5 0 0	1.10c	5 0 0
Tin plate, box 108 lb.	$ 3.41	0 14 0	.....	.....	.....	.....	$ 8.28	1 14 0

Domestic Prices at Works or Furnace—Last Reported			French Francs		Belgian Francs		Rentenmarks	
Fdy. No. 3 Pig Iron**	$14.24	2 18 6	$11.76	300(2)	$12.83	460	$18.51	78
Basic pig iron	14.61	3 0 0	12.74	325(1)	11.58	415	20.29	85.50
Furnace Coke	2.68	0 11 0	5.68	145	5.16	185	5.08	21.40
Billets	25.57	5 5 0	19.21	490	17.72	635	26.22	110.50
Standard rails	1.79c	8 5 0	1.41c	785	1.57c	1,210	1.37c	127
Merchant bars	1.63c	7 10 0	.83c	460	.81c	620	1.38c	128
Shapes	1.90c	8 15 0	.99c	550	.79c	610	1.35c	125
Plates	1.95c	9 0 0‡	1.26c	700	.94c	725	1.59c	147
Sheets, black, 24 gage	1.90c	8 15 0	2.19c	1,215	1.82c	1,400	1.26c	117
Sheets, gal. 24 ga., corr.	2.17c	10 0 0	2.39c	1,325	2.47c	1,900	3.56c	330
Plain wire	2.06c	9 10 0	1.98c	1,100	2.08c	1,600	2.24c	207
Bands and strips	2.06c	9 10 0	1.10c	610	1.40c	1,075	1.60c	148

*Middlesbrough; †Basic; ‡delivered; (1) Basic-bessemer; (2) Longwy. British export furnace coke £0 11s 0d ($2.68) f. o. b. Ferromanganese £17 9s 6d ($84.93) delivered Atlantic seaboard, duty-paid. German ferromanganese £9 0s 0d ($43.74) f. o. b.; **Silicon 2.50-3.00. British quotations are for basic openhearth steel. French, Belgian, Luxemburg, and German are for basic-bessemer steel.







We also manufacture High Speed Metal Cut-Off Saws, Saw Grinders, Circular Milling Saws, Pneumatic Rivet Sets, Chisel Blanks and Hardened Steel Specialties.

Teeth are solid backed

HUNTER

Inserted Tooth Saw

One of the latest developments in saw design is the solid back tooth construction as shown here.

In this Hunter Inserted Tooth Saw the bottom of the tooth has a solid bearing on the sawbody. Both teeth and body are serrated—teeth lock firmly in saw avoiding possibility of teeth moving during cutting operation—teeth are adjustable up and down serrations.

Ease of grinding is another advantage—teeth are ground in the saw. The only time it is necessary to remove teeth is for replacement.

You should be familiar with this new Hunter Inserted Tooth Saw. Want representative to call? Just tell us where and when you want him to call.

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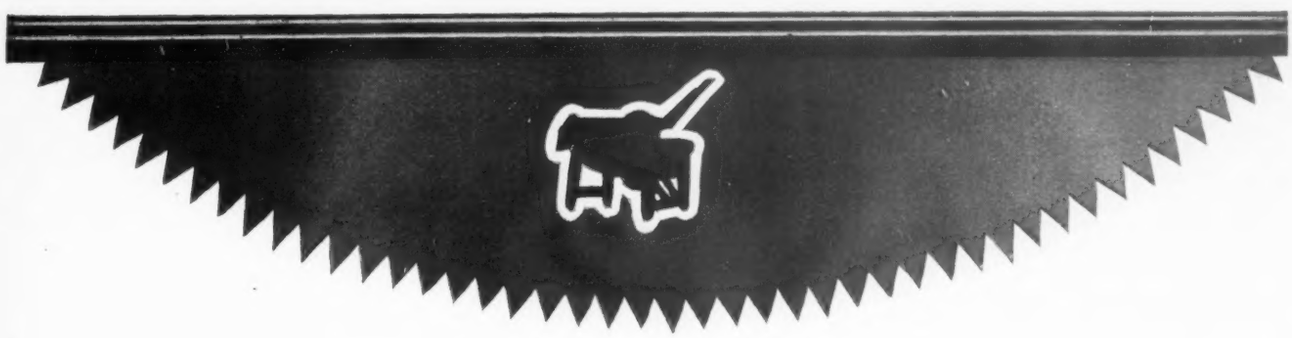


Machinery

HEAT waves appear to have exerted a further deadening effect on machinery buying throughout the country, although in the East some active inquiry continues from governmental departments and a few orders are being booked from automobile plants. Greatly reduced inquiry and the slowest sales in years are noted in the Chicago territory where action on several railroad lists has been postponed until after the vacation season. Sales in most districts are practically all for replacement and are for one or two machines only. Export business holds fairly constant, orders from England and France wiping out loss in Russian bookings.

New York—Active inquiry for machine tool equipment continues to come from government shops and yards. Bids go in July 21 on 16 tools for the navy department at Thorne, including two bench grinders, geared head precision lathe, one shaper and a patternmaker's lathe.

General interest in new machinery is dull, although a few orders have come through from automobile plants as noted last week. July opened slowly and the month is expected to bring little change in the general situation.

Action is still pending on 17 lathes opened last week for Brooklyn navy yard. South Bend Lathe Works, South Bend, Ind., was low on eight of the machines. Prices in general varied widely and some weak figures were noted. Brooklyn takes bids next week on a turret and precision lathe.

E. W. Bliss Co., Brooklyn, has shipped to the Briggs Mfg. Co., Detroit, 12 large double-crank presses for automobile body work. These presses are arranged with magnetic clutch and brake control.

Worcester, Mass.—Little change is noted in the machinery market here, sales and inquiry being slow, with apparently no basis for any marked revival before fall. Dealers are attempting to make the best of an admittedly apathetic situation.

Pittsburgh—Machine tool sales and inquiry are quiet with the market commencing to reflect usual summer quietness. Occasional orders are being received for individual tools but there is no activity in large lots. Inquiry from railroads is almost wholly lacking and purchases of steel companies run more to special equipment than standard tools. A fair volume of inquiry is pending but dealers look for little improvement in activity in the near future.

Cleveland—Machinery sales here are spotty and irregular, according to most dealers and builders. No definite trend in buying can be discerned and what few sales are being transacted are for single machines going to a widely diversified group of buyers. This business is almost entirely for replacement.

One builder states that it is not a lack of capital which is preventing purchases, but that in many instances where new machinery is needed badly and ample funds are available for its acquisition, plant officials are loath to spend the money, for purely psychological reasons. Until this attitude can be changed, sales of machine tools will continue to suffer.

Some export business is being booked here with England and France, reflecting an activity on the part of foreign automobile builders. These sales, however, are mainly special machines.

July and August are counted as dull months by local machinery interests, although one organization reports more work being done on prospective business at the present than for several months past.

Chicago—Not more than $12,000 to $15,000 worth of actual machine tool inquiry has come out in the last ten days, and sales are the slowest in years. Several houses note that June business was the lightest in their history. An important volume of inquiry is believed to be in the making from several Milwaukee district buyers, but no action is expected until after the vacation season. Santa Fe railroad has postponed 25 to 30 items of its inquiry for later in the year, and it appears the St. Paul railroad list of about 60 items will await decision of the interstate commerce commission on higher freight rates.

University of Chicago is inquiring for 15 items, totalling about $4000, for its graduate education school. The list includes a milling machine, 13 x 3-inch lathe, filing machine, 20-inch drill, grinder, hacksaw and smaller equipment. Illinois department of purchases has taken bids for a 20-inch shaper, small lathe, several drills and other equipment, amounting to about $5000 for the Soldiers' Children's orphanage, at Normal, Ill.

Many of the machine tools sold in the stock of the Badger-Packard Machinery Co., Milwaukee, last week netted only about 25 per cent of their inventory value, it is stated.

Machinery Exports Continue At Established Level

Washington—Exports of industrial machinery for May, according to the industrial machinery division of the department of commerce, amounted to $12,495,000, a slight increase over the April figure of $12,068,000. The outstanding gain occurred in exports of prime movers, which advanced to $1,744,000, almost doubling the aggregate for April.

As usual, exports of metalworking machinery were of major importance in this trade, establishing a total of $3,074,672. This figure represents an increase over the April total, $2,817,000, and compares favorably with the average monthly shipments of 1930. The total for May, 1930, was $4,800,101.

In the construction and conveying machinery group foreign sales were somewhat lower during May than in the previous month, mainly as a result of a lessened demand for excavators, power shovels and cranes.

Will Determine Engineers' Influence on Progress

Asserting that engineering has promoted human happiness despite frequently expressed distrust of the consequences of the machine age, the four major engineering societies of the United States and their research agency, the Engineering Foundation, are preparing to conduct a nationwide symposium on "engineering progress," to which leaders in many fields will contribute.

The motive in collecting and publishing a series of statements on benefits from engineering progress is to advance the good of mankind by stimulating resourceful Americans to think their way through the passing months of maladjustment into effective action that will restore the normal state of steadily ascending happiness and freedom.

Questions to be answered will include: What has engineering done for humanity's progress and happiness; and what have engineers accomplished for the good of mankind by their applications of science, by their control of the forces of nature, by their utilization of ever-increasing numbers of raw materials and of former wastes?

Construction and Enterprise

CONCISE, TIMELY BUSINESS BUILDING OPPORTUNITIES IN FIELD OF INDUSTRY

New England

BOSTON—Maintenance shop will be constructed at Beth Israel hospital, 330 Brookline avenue.

BOSTON—Electrical Mfg. Corp. has been organized by Howard H. Cooley, 10 High street, to manufacture electrical equipment and appliances.

CAMBRIDGE, MASS.—City will enlarge reservoirs and add motors to cost $30,000. Hazen & Everett, 25 West Forty-third street, New York, are engineers.

CHATHAM, MASS.—Chatham Water Co. will construct a waterworks system and erect a pumping station. A. S. Dowing, 89 Broad street, Boston, is in charge.

PITTSFIELD, MASS. — Pittsfield Electric Co., C. E. Merrill manager, Pearl street, will build a service building at Renne avenue and Pearl street. Plans are private. Cost is estimated at $75,000.

WALPOLE, MASS.—E. E. Gill, 90 Lewis street, is reported to be in the market for drills, reamers, dies, taps and chucks.

WHITMAN, MASS.—National Foundry Inc. has been organized by W. A. Luce, Whitman, and G. J. Clark, West Hanover, Mass., to operate a plant for the manufacture of iron, steel and other metal castings.

WARWICK, R. I.—Follett & Smith, Hillsgrove district, plan to build a hangar unit and machine shop.

New York

BROOKLYN—Bureau of supplies and accounts, navy department, Washington, will receive bids July 14 on schedule 6040 for one precision toolmaker's lathe, 13 x 50 inches, on schedule 6071 for one toolmaker's lathe, 13 x 36 inches, on schedule 6072 for one universal turret lathe and on schedule 6074 for one bolt threading machine.

BUFFALO—Airport advisory board, municipal airport, in co-operation with the chairman of the chamber of commerce aviation committee, is considering a development plan for the airport, which will include construction of a new hangar with shop facilities.

FLUSHING—Empire State Pipe Corp., 158 Thirty-third avenue, proposes to erect a 1-story kiln shed, 82 x 100 feet, and a work shed, 20 x 177 feet.

NEW YORK—Precision Instrument Corp. has been incorporated with $10,000 capital by A. L. Epworth, 1440 Broadway, to make machinery.

SCHENECTADY—American Locomotive Co., 30 Church street, New York, proposes to make alterations and extensions at its plant here. Cost is estimated at $200,000.

SYRACUSE—C. F. Stanton Engineering Co. has been incorporated with $20,000 capital by Brewster, Johnson & Gloger, to deal in metals.

WHITE PLAINS—Economy Steam Generator Corp. has been incorporated with $20,000 capital by J. G. Koteen.

New Jersey

ATLANTIC CITY—Atlantic Refrigeration Co. has been incorporated with $125,000 capital by Elwood F. Kirkman, to manufacture refrigerators.

ELIZABETH—Joint meeting, S. H. Rollinson chairman, city hall, Newark, N. J., will receive bids July 16 for a joint sewage treatment plant and for equipment. Items will include pumps, ejectors, traveling cranes, compressors, etc. A. Potter, 50 Church street, New York, is engineer.

FLEMINGTON — Foran Boiler Co. Inc. has been incorporated with 300 common shares by G. K. Larhe, to make heaters.

JERSEY CITY—Armory board, Trenton, N. J., proposes to build a machine shop at the armory here. H. A. Kelly, 921 Bergen avenue, Jersey City, and J. O. Hunt, Hanover street, Trenton, are architects. Approximate cost $500,000.

LINDEN—Board of council, city hall, will build a pumping station in connection with a sewage disposal plant. Cost is estimated at $25,000.

NEWARK—Fleet Carrier Corp. has been incorporated with $50,000 capital by Rudolph Hartman, 60 Park place, to manufacture auto bodies.

NEWARK—American Screw Products Corp. has been incorporated with $100,000 capital by William Ambruzze, 31 Clinton street, to manufacture machinery and engines.

NEWARK—Auto Car Co., Ardmore, Pa., has started construction of a branch plant for service, repair and distribution. Cost is estimated at $70,000. Company manufactures trucks and parts.

PATERSON — Farman - Standard Aircraft Corp. will engage in the manufacture of commercial and military planes in the plant formerly occupied by the New Standard Aircraft Corp.

PATERSON — Excello Machine & Welding Works Inc., whose incorporation recently was noted, advises through Stephen T. Okker that the company has secured plant and equipment, with office at 260 Tenth avenue. John Nordmeyer is president. Company will conduct a general machine and welding business. (Noted June 25.)

Pennsylvania

AVELLA—Pittsburgh-Terminal Coal Co., S. Pursglove president, 833 Wabash building, Pittsburgh, has plans for erection of a tipple and coal washing plant here. Structure will be 50 x 150 feet. H. M. Chance & Co., Fifth and Chestnut streets, Philadelphia, are engineers and J. L. Kostyal, 245 Cedar boulevard, Mt. Lebanon, Pa., is consulting engineer. Cost is estimated at $100,000.

PHILADELPHIA — Two-story machine shop of R. Forester at Ridge avenue and Parker street recently was damaged by fire.

PHILADELPHIA—Metal Specialties Co. has leased plant space at Eleventh street and Washington avenue, for the manufacture of metal novelties.

PHILADELPHIA—Boiler plant, 70 x 74 feet, will be built by Pennsylvania Sugar Co., Delaware avenue and Shackamaxon street. Cost, with equipment, is estimated at $70,000.

PHILADELPHIA—Reading Co., Clark Dillenback engineer, Reading terminal, has a building permit for construction of a car repair building at Third and Erie streets. Estimated cost, $10,000.

PHILADELPHIA—Bureau of supplies and accounts, navy department, Washington, will receive bids July 14 on schedule 6041 for one electric seam welding machine, and on schedule 6073 for one electric heat treating furnace.

PITTSBURGH — Curtiss - Wright Flying Service, 27 West Fifty-seventh street, New York, will erect a hangar unit, 80 x 100 feet, at Curtiss Bettis airport here. Cost is estimated at $50,000.

PITTSBURGH — Murnane Safety Store Front Co. has been incorporated with $45,000 capital by James P. Murnane, Burbank, Calif., and Ashley E. Dreyer, 7115 Card lane, Pittsburgh, to manufacture and sell metal store front constructions.

READING—Automatic Forming Die Corp. has been incorporated with $5000 capital by Harry D. Weidler, 504 Heine street, and Clarence Mendelsohn, 424 South Twentieth street, to manufacture and deal in automatic forming die machinery, parts, tools, electrical equipment and devices.

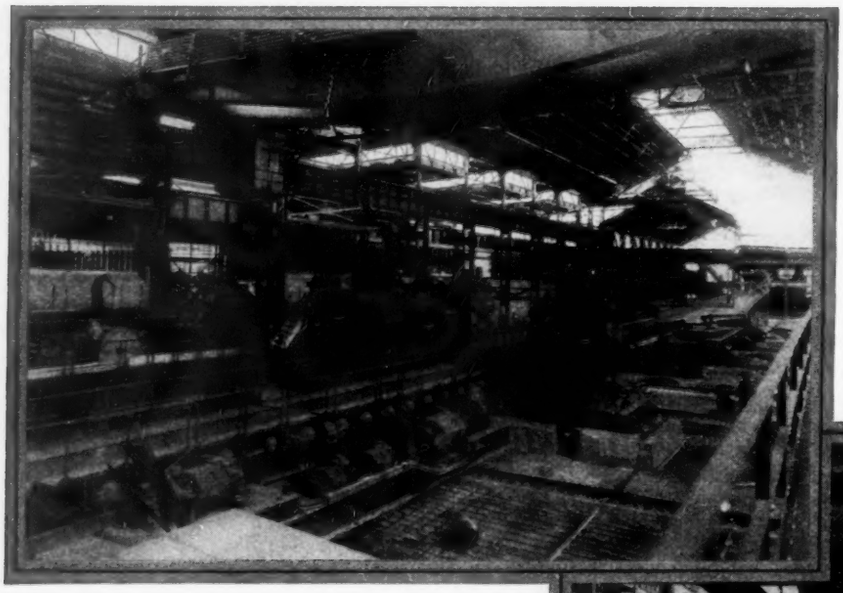
WILLIAMSPORT—Pennsylvania Power & Light Co., Allentown, Pa., will construct a gas pipe line with terminus here and will erect compressor plants.

Ohio

CLEVELAND—National Metal Abrasive Co. has been incorporated with

MORGAN ENGINEERING (MEco) MEANS MILL EFFICIENCY

MORGAN • STRUCTURAL • MILLS



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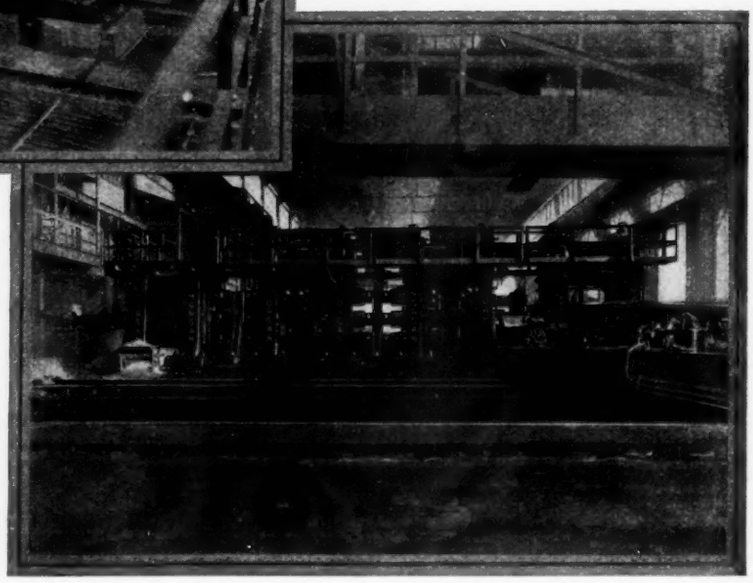

MILLS were designed and built by us complete for rolling structural shapes up to 24″ I beams and 8″ x 8″ angles. These are but several of many structural mill installations, designed and built by us, including an 18″ mill.

Write for Bulletin No. 16

3

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MORGAN DESIGNS AND BUILDS
Blooming Mills · Plate Mills
Structural Mills
Continuous Mills
Rod and Bar Mills

Electric Traveling Cranes
Steam Hydraulic Forging Presses
Steam Hammers

DESIGNERS · MANUFACTURERS · CONTRACTORS

500 no par shares by R. A. Baskin, Guarantee Title building.

CLEVELAND—Otis Steel Co., 3341 Jennings road, has a building permit for construction of a motor room for its plant at 601 Clark avenue, in connection with plant improvements. Cost of the unit is estimated at $25,000.

COLUMBUS—J. Leslie Morris Co., 922 Venice boulevard, Los Angeles, has leased space at 162 North Fourth street for the manufacture of engine bearings. Operations will be started soon, with 40 employes.

COLUMBUS—Superior Die, Tool & Machine Co. has been incorporated with 500 no par shares by J. E. Finneran, president of the Columbus Anvil & Forging Co. New organization will make special machinery, operating on the same property as the Columbus Anvil company, but as a separate company.

MANSFIELD—Plant of the Taylor-Dise Co. recently was virtually destroyed by fire. Loss is estimated at $70,000 to $100,000. Company manufactures stoves and metal furniture.

MASSILLON—Ohio Water Service Co. plans to build a water treating plant at a cost of approximately $175,000. Work is to start immediately.

SANDUSKY—Plant of the Modern Pattern Co. recently was damaged by fire, loss being estimated at $15,000.

TOLEDO—Toledo Saw & Grinding Co., 222 Sycamore street, advises through D. A. Hendricks, president, that fire recently noted as damaging company's plant destroyed about 75 per cent of the property. Operations are being continued temporarily at about 33 per cent. Company is rebuilding and will occupy the new plant about August 1. (Noted July 2.)

Indiana

EVANSVILLE—Sunbeam Electrical Mfg. Co. will award contract for a plant addition to be built on West Morgan street. Plans are private. Approximate cost, $40,000. Company manufactures headlights, washing machines and light plants.

MUNCIE—City, C. E. Stewart superintendent of public works, will make waterworks improvements and install a 100-kilowatt generator and a 7,000,000 gallons per minute turbine centrifugal pump. Cost of the project is estimated at $200,000.

NEWCASTLE—Empire Tool Co., Dayton, O., will transfer operations here, establishing production in a local plant about August 1, with 40 employes. Company manufactures dies, tools, jigs, fixtures and special machinery. Arthur M. Ibaugh is president.

SOUTH BEND—Albert Kahn Inc., 1004 Marquette building, Detroit, will receive bids July 30 for boilers and stokers to be installed in the power house addition here for Notre Dame university.

Michigan

DETROIT—Detrola Radio Corp., 412 Broadway Central building, has been incorporated with 500 no par shares by Charles F. Welsh, Highland Park, Detroit, to manufacture and deal in radios.

GLADSTONE—Ford Motor Co., Fordson, Mich., proposes construction of a foundry unit and other structures in connection with a development here, site for which has been acquired. Equipment will be required. Cost is estimated at $250,000.

Illinois

CHICAGO—Machine shop of Blomfeldt & Rapp, 108 North Jefferson street, recently was damaged by fire.

CHICAGO—Sanitary district of Chicago, J. J. Sullivan clerk, 910 South Michigan avenue, will receive bids July 16 for equipment for the Calumet sewage treatment works extension, division C, items to include pumps and blowers, air handling equipment, compressors, control apparatus and auxiliary machinery.

WAUKEGAN—Steel Kitchens Corp., 7 Manufacturers' terminal, has been incorporated with $50,000 by Brown, Fox & Blumberg, 2059 Continental Illinois Bank building, Chicago, to deal in household and office equipment.

WILMETTE—Duke Electric Tool Co. has been incorporated with $20,000 capital by Robert H. Stoll, 1201 First National Bank building, Chicago, to manufacture machinery and electrical supplies.

Southern States

WILMINGTON, DEL.—Bandalloy Piston Co. has been incorporated with 2000 common shares by Corporation Trust Co., to deal in motor parts.

WILMINGTON, DEL.—Gerotor May Co. has been incorporated with 100 common shares by Corporation Service Co., to deal in pumps, compressors and engines.

WASHINGTON — Potomac Electric Power Co., Tenth and East streets northwest, proposes to erect a substation on First street near T street. Cost, with equipment, is estimated at $45,000.

WASHINGTON — Robey - Lambert Diesel Engine Co., 923 Kenilworth avenue northeast, advises through E. B. Robey that the company is engaged in building and testing high speed, 2-cycle diesel engines, and will not start production for some time. (Noted June 25.)

MIAMI, FLA.—F. C. Billard, rear admiral, U. S. Coast Guard headquarters, Washington, has closed bids for the construction of a 100 x 100-foot hangar to be built at Dinner Key seaplane base, near here.

OCALA, FLA.—Florida Lime Co. will rebuild with its own forces its plant, recently damaged by fire. Structure will be 75 x 100 feet. Air separators, bins, conveying equipment, diesel engine and motor will be installed.

ATLANTA, GA.—Lawrence Manning, 6 Fifteenth street, is reported to be in the market for bending rolls, gantry crane with 160 and 175-foot span, 1500 to 2000 horsepower motor, and other items.

MONROE, LA.—Southern Transcontinental Airways Inc. proposes to build a hangar at Selman field here.

NEW ORLEANS—Southern Blow Pipe & Mfg. Co. has been incorporated with $5000 capital by Joseph F. Vogt, 2710 Robert street.

NEW ORLEANS—Service Foundry Inc. has let contract to T. A. Pittman Inc., Canal Bank building, for construction of a plant unit at South Peter and Erato streets.

HATTIESBURG, MISS.—State teachers' college is considering construction of a power plant. Cost is estimated at $60,000.

WEST JEFFERSON, N. C.—Northwestern North Carolina Utilities Inc., care of Empire Public Service Corp., 1600 Arch street, Philadelphia, is having preliminary plans prepared for a hydroelectric plant proposed for erection on the New river, near here. Cost is estimated at $250,000.

JOHNSON CITY, TENN.—Holston River Power Co. plans to build a hydroelectric generating plant on the Holston river, plant to have capacity of 24,000 horsepower.

MEMPHIS, TENN.—Memphis Natural Gas Co. has plans for compressor plants and installation of equipment in connection with a gas pipe line to be built from Memphis to Jackson, Tenn. Cost of the project is estimated at $400,000.

FAIRMONT, W. VA.—Kinite Corp., S. E. Spartz manager, Milwaukee, is establishing a foundry here for the production of molds for glass bottles. Company will employ 30.

MARTINSBURG, W. VA.—Water commission will improve waterworks facilities and will purchase auxiliary mechanical equipment and pumping machinery.

Oklahoma

CHICAKASHA—City, J. E. Larson mayor, has closed bids for erection of a filtration plant addition. Cost is estimated at $90,000. Robert O. Bradley is consulting engineer.

Texas

COLLEGE STATION—Texas Agricultural & Mechanical college board of directors has approved plans for erection of a two and 3-story engineering shops building. Plans are before Prof. F. E. Giesecke, college architect.

Work will be under superivision of Will A. Orth, College Station.

Wisconsin

BANGOR—City council is considering a tentative proposal for a municipal light and power plant. Cost is estimated at $25,000. G. M. Orr Co., Baker building, Minneapolis, is consulting engineer.

Minnesota

WINONA—City will purchase one automatic stoker, bids to be received until July 14.

North Dakota

FT. YATES—Northern Power & Light Co., Selfridge, N. D., has plans for a power project here, to include construction of a substation. Cost is estimated at $50,000.

South Dakota

ABERDEEN—J. Berg, state engineer, Pierre, S. D., is in charge of construction of a 2-story power plant, 40 x 70 feet, to be built at the Northern State Normal and Industrial school, here. Cost is estimated at $100,000. Plans are by G. F. Fossum, Aberdeen. C. Foster, 512 Sellwood building, Duluth, Minn., is consulting engineer.

Nevada

HAWTHORNE—Bureau of supplies and accounts, navy department, Washington, will receive bids July 21 on schedule 6076 for two 10-inch bench grinders, one floor grinder, one portable grinder and one electric tool post grinder. Bids will be received on schedule 6077 for one engine lathe, on schedule 6078 for one universal shaper, on schedule 6079 for one screw cutting precision lathe and on schedule 6080 for one drill press.

Pacific Coast

LONG BEACH, CALIF.—Curtis Mfg. Co. will establish operations here for the manufacture of trucks. H. S. Beckman, Long Beach, is treasurer. W. S. Hambly, Los Angeles, is president, and headquarters will be maintained at Los Angeles.

OROVILLE, CALIF. — Boston Machine Shop, V. B. Hayes owner, recently was damaged by fire, with loss estimated at $6000.

PASADENA, CALIF.—California Institute of Technology proposes to build an engineering building and laboratory unit. Cost, with equipment, is estimated at $500,000.

SAN DIEGO, CALIF.—Bureau of supplies and accounts, navy department, Washington, will receive bids July 21 on schedule 6063 for one jib boom crane.

SAN FRANCISCO—Bureau of supplies and accounts, navy department, Washington, will receive bids July 14 on schedule 6039 for 13 centrifugal fans, on schedule 6044 for one surfacing machine, and on schedule 6051 for one rotary metal saw. Bids will be received July 21 on schedule 6068 for one riveting machine.

SAN PEDRO, CALIF. — Bureau of supplies and accounts, navy department, Washington, will receive bids July 21 for one 20-inch crank shaper.

VENTURA, CALIF.—Board of education has let contract for construction of a 1-story shop building for Ventura junior college. Cost is estimated at $75,000.

Dominion of Canada

ST. JOHN, N. B.—Contracts for erection of a power plant for St. John General hospital have been awarded. Cost is estimated at $60,000. B. Mooney & Sons Ltd., 112 Queen street, has the general contract.

GODERICH, ONT.—J. Nicholson is expanding facilities for dredging and handling gravel. Diesel engines, a generator, and handling equipment will be installed.

ST. THOMAS, ONT.—City, E. M. Bennett clerk, will expend approximately $10,000 for boiler replacements.

WATFORD, ONT.—Public utilities commission is considering establishment of a waterworks plant. R. Morningstar is chairman.

WEYBURN, SASK.—City, Charles West clerk, will construct a sewage disposal plant at a cost of approximately $35,000. J. C. Meade, Regina, Sask., is consulting engineer.

New Trade Publications

STEEL TOOLS—Samuel Osborn & Co. Ltd., Sheffield, Eng., has issued a leaflet describing solid end tool blanks of its cutting alloy steel.

INSULATING CEMENT.—C. W. Poe Co., 7600 Carnegie avenue, Cleveland, in a current bulletin describes results from use of its insulating cement in minimizing heat loss.

ALLOY STEELS — Republic Steel Corp., Youngstown, O., in an illustrated booklet presents a wealth of data on alloy steels, with instructions for heat treatment of these steels, in convenient chart form.

BUSHINGS — Johnson Bronze Co., New Castle, Pa., describes in a current bulletin its new type of self-lubricating bushings, of cast phosphor bronze and rolled sheet metal, both graphite impregnated.

PUMPS—Worthington Pump & Machinery Corp., Harrison, N. J., has released the following trade publications recently: Specification sheet W-205-B1 on steam-air injectors for stationary and marine service; W-310-S12A, centrifugal pumps, types CA and CB; W-319-S3, centrifugal pump, type WF; L-711-S3, dry vacuum pumps, two-stage, feather valve, single horizontal, belt and steam driven; W-112-S15, horizontal duplex, pot type, piston pattern pumps for oil.

STEEL TOOLS—Edgar Allen & Co. Ltd., Sheffield, Eng., is distributing a leaflet describing its welded tools, in which a solid piece of tool steel is welded to a steel shank, giving greater strength. A cutting tool chart is included.

INSULATING FIREBRICK — Babcock & Wilcox Co., 85 Liberty street, New York, in a current bulletin describes a type of firebrick it has developed, possessed of high insulating qualities combined with refractory qualities. Curves, sketches and calculations illustrate its characteristics. Advantages of the use of this material are given.

STEEL CONSTRUCTION—American Institute of Steel Construction Inc., 200 Madison avenue, New York, has issued two publications on its work and accomplishments. One is a list of steel constructors in the United States, Canada and Mexico, designating plants and sales offices. The other lists services rendered the industry, officers of the institute and district engineers.

SPEED REDUCERS—Horsburgh & Scott Co., 5114 Hamilton avenue, Cleveland, has issued a catalog of its speed reducers. It discusses the design and selection of reducers. A selection chart is given as a guide to choice of the proper reducer. Eight types of worm gear reducers and three types of herringbone gear reducers are described.

METAL CRIBBING—Armco Culvert Manufacturers association, Middletown, O., has issued a bulletin on its metal cribbing for retaining walls. It is adaptable for railroad and highway retaining walls and river bank protection work. Illustrations show how the cribbing is installed and how the open and closed face types look when in place.

STEAM GENERATOR—Combustion Engineering Corp., New York, in catalog SG-1 describes its steam generator in eight standard sizes, a complete unit for steam generation in simple compact arrangement for high efficiency. It is fully illustrated by diagrams and the text describes the principles and operation.